

## **DRAFT REPORT**

### **18<sup>th</sup> meeting of GRRF informal group on**

### **Automatic Emergency Braking and Lane Departure Warning Systems**

Venue: OICA offices (4 rue de Berri – 75008 Paris – France)  
Date : Friday 7 December 2012  
Chairman: Mr. Johan Renders (EC) (johan.renders@ec.europa.eu)  
Secretariat: Mr. Olivier Fontaine (OICA) (ofontaine@oica.net)

#### **1. Welcome and Introduction**

The experts were informed about the context of the meeting.

#### **2. Roll call of delegates**

Attendance list available upon request to the informal group Secretary

#### **3. Approval of the agenda**

The agenda was approved with no change.

#### **4. Approval of the minutes of the last meeting**

Document: AEBS/LDWS-17-04

The experts held a debate about the interpretation of the 2-step approach suggested by the Chair at the previous session of the informal group.

As the task of informal group is to propose an informal document to the GRRF-74<sup>th</sup> session, the experts wondered whether the suggestion by the Chair for a 2-step approach addresses the process of work of the informal group for the establishment of new provisions for light vehicles, or whether it addresses the implementation of these provisions into the AEBS regulation.

J questioned the way to increase the stringency of the requirements, knowing that the Industry has no experience. The expert pointed out that the OICA/CLEPA proposed values are already difficult to achieve, and that it will be even more difficult to reach increased values.

OICA clarified that the Industry proposal is already a step in the unknown. OICA could only offer, in the frame of a 2-step approach, a date for re-negotiate the performance criteria. More stringent requirements, would be impossible to predict at this moment.

CLEPA supported this OICA position, and pointed out that the discussions of the today's meeting will probably show how difficult it is to reach the OICA/CLEPA proposal itself. The expert from CLEPA proposed to review the concept of a 2-step approach at the end of the day. NL was surprised at the last meeting by the suggestion by the Chair, and understood the Chair's suggestion as defining now the values for both steps and the necessary delay perhaps now or at a later stage, according to the wish of the Contracting Parties (EU). NL however was in favour of a 1-step approach, but was flexible on this item.

F preferred to adopt both steps at the same time, accepting the OICA/CLEPA proposal for the 1<sup>st</sup> step, depending on the date to be decided for the re-negotiation of the performance requirements (2<sup>nd</sup> step).

Germany found it difficult enough to achieve the performance requirements proposed by CLEPA/OICA, such that a potential 2<sup>nd</sup> step would have to be clarified at a date to be defined.

J found better to define early both steps (support to NL), but recognized it would not be easy.

Conclusion: minutes adopted with no change.

## 5. Outcomes of WP29 in its 158<sup>th</sup> session (November 2012)

Documents: ECE/TRANS/WP.29/2012/CRP.5 + Add.1 to 9 + CRP.6  
ECE/TRANS/WP.29/2011/92/Amend.1  
ECE/TRANS/WP.29/1099  
Annex XXX (European Commission)

The experts were informed that WP29 at its 161<sup>st</sup> session of November 2012 adopted the four documents creating the new regulation on AEBS and its 1<sup>st</sup> series of amendments. This information can be found in p 26 of the official report ECE/TRANS/WP.29/1099:

Uniform provisions concerning the approval of motor vehicles with regard to the Advanced Emergency Braking Systems (AEBS)	35	2011/92 and its Amend.1	35/0/0	*
01 series of amendments to the Regulation on AEBS	35	2011/93 and its Amend.1	35/0/0	*

The Chair was of the opinion that some clarification of the text adopted at WP29-158, p 3 of document WP29/2011/93/Amend.1, last sentence of the row 2, was necessary because an interpretation could be that the M3 vehicles with hydraulic braking would not have to fulfil the requirements of row 1 before the 2016 date mentioned in row 2. The authors of the text in cells B-H/2 indeed aimed the vehicles mentioned in cell A/2, but omitted to precise whether the vehicles addressed by the footnote 1 (Vehicles of category M3 with hydraulic braking system) would be subject to the same provisions.

OICA was of the opinion that the vehicles in footnote 1 are part of row2. Then the 1<sup>st</sup> date would be in Nov 2016. But the expert acknowledged that the wording is such that these vehicles could be approved already as from 2013.

CLEPA did not share the interpretation of OICA, and proposed to discuss this at a later stage.

The question of the true date of the Nov 2013 WP29 session was also raised, leading to the question whether the values should be adopted already at the June session of WP29.

The European Commission representative clarified that the intention is that, once the AEBS and LDWS UN Regulations have entered into force and the EU has acceded to them, UN regulations approvals would be accepted as an alternative to the EU approvals, taking into account that the EU legislation provides for a number of exemptions from the AEBS/LDWS carriage requirements. The representative of the European Commission informed that the European Commission Services were about to send a letter to the UN Secretariat to clarify the way how the EU intends to apply the new UN regulations, in response to the request of the WP.29 Secretariat to CPs to provide information on the application of the 01 series of the AEBS regulation (done, see Annex 1 attached).

Conclusion: items to be addressed at a later stage, to be added in the agenda for next meeting.

## 6. AEBS (Automatic Emergency Braking Systems):

Documents: AEBS/LDWS-17-02-Rev1  
AEBS/LDWS-17-04 – Annex 1(Proposal from CLEPA/OICA for AEBS step 2)  
AEBS/LDWS-18-02  
AEBS/LDWS-18-03 (OICA/CLEPA)

Germany presented the document AEBS/LDWS-02. The expert from Germany explained that Germany thought about asking more severe requirements, but then aligned the proposal on the OICA/CLEPA proposal. The expert summarized the justifications and stressed that the LPTS (Last Point To Steer) is usually at the same time as the LPTB (Last Point To Break)

Japan questioned the compatibility with the Vienna Convention, which would necessitate to request [1.4] latest time to warn before the automated emergency braking phase would start. The expert from D clarified that their proposal does not forbid warning earlier. The warning should be at the LPTS because up to that time it is still be possible for the driver to avoid the obstacle by steering. It was keen that there is some time between the start of the Emergency Braking phase and the warning.

CLEPA clarified that the Vienna Convention only requests the driver to be able to override the system. OICA clarified that the wording specifies “not later than”, permitting the system to warn before AEBS is taking the control.

NL was also in favour of a warning time before the automatic emergency braking system takes the control of the vehicle. The expert recalled that D was initially keen for a 2 second delay for the HCV. In addition, the N2 > 8T with pneumatic Braking System must already fulfil the warning time of row 1. The expert from the NL in addition recalled that OICA in p 16 of its presentation AEBS/LDWS-17-02-Rev.1 request 2s.

The Chair recalled one of the main principles in the adopted AEBS regulation, as specified in paragraph 5.5.1. that the timing of the warning signals shall be such that they provide the possibility for the driver to react to the risk of collision and take control of the situation and shall also avoid nuisance for the driver by too early or too frequent warnings. This principle requires both aspects to be taken into account.

OICA clarified that Industry gained experience in the meantime and could now justify the 1s TTC. The Chair wondered whether using this 1s for warning the driver could be considered to find a common understanding on the warning timing issue.

- 6.1. Consideration of a 2-step approach proposed by the Chair at the 17<sup>th</sup> meeting:  
6.1.1. OICA/CLEPA proposed values for the 1<sup>st</sup> step,

OICA presented the document AEBS/LDWS-18-03, as a joint OICA/CLEPA presentation, based on researches conducted by VDA.

The Chair raised the question that in real driving conditions there would not be always a possibility to steer around the obstacle, in which case a warning timing based on LPTS would occur too late for the driver to avoid the collision by braking. CLEPA clarified that some researches are conducted for evaluating the space around the target and adapt the warning time to the situation. But the expert clarified that this is for future development.

NL was of the opinion, seeing the data, that there is still time for warning (about 1s). OICA clarified that the manufacturer would then chose for this vehicle to provide an earlier warning. The

representative of OICA reminded that, in addition, the less efficient system is the switched-off system because of the annoyance. In addition, systems in the future will be able to predict the driver's intention by analysing the driver's behaviour.

The Chair invited the participants to submit their alternative proposals for the warning timing for the 19<sup>th</sup> meeting of this informal group.

NL was still convinced that there is time for a warning time (28 m as LPTS implies 1.5s).

A further debate took place on the best time to warn, because the CLEPA/OICA proposal would allow that the system warns and brakes simultaneously.

NL pointed out that putting forward a haptic warning (braking) would burden the other road users, while an optical warning wouldn't. OICA stressed that the haptic warning could be other than braking.

J did not change their mind that there is a need for a warning in advance of the start of the automatic emergency braking phase, but was aware of the risk of the driver switching-off the system if he would feel annoyed by too early warnings.

The group faced the debate of avoiding the collision by steering vs. mitigating the collision by braking.

The Chair saw no value added in systems that would warn at the same time of the start of the emergency braking phase.

The Chair repeated the request to the Contracting Parties to submit their views and proposals concerning the warning timing for the January meeting.

The group then entered discussions about speed reduction in Row 2 (stationary target scenario) The NL observed that a big difference exists between HCVs and light vehicles and saw this as a result of the technique of hydraulic braking build up time. In view of this, the expert could preliminary agree with the OICA proposal.

F found relevant to have an earlier warning. The expert from France recalled in addition that the target is designed for withstanding impacts up to 50 km/h only.

J found difficult to have a position on speed reduction because this parameter is much linked to warning timing.

Conclusion: too early to have definite decisions

NL urged Industry to provide data about pressure build-up time of current hydraulic systems, in order to get an idea of their capability.

OICA clarified that there is currently no such AEBS system as the current ones are low speed city safety systems or adaptive speed limiters.

- 6.1.2. increase these criteria for the 2<sup>nd</sup> step, i.e. stationary target test: increased subject vehicle speed reduction value; moving target test: lower target vehicle speed value

The Chair requested the views of Industry on this item: see discussion under item 4 above.

NL would see advantage of a 2<sup>nd</sup> step only if values can be defined beforehand.

OICA clarified that the criterion for amending the values should be safety, and that this should only be done based on the experience, i.e. 2 years after 2018. However the regulations are regularly reviewed at GRRF hence the performance requirements will be naturally reviewed.

The Chair concluded that, in view of the lack of clarity for the 2016 target, the discussion on the definition of values for a 2<sup>nd</sup> step would be rather premature at this stage, and suggested to delay this discussion to the next meeting.

## 6.2. Revision of the relevant wording of the regulation

The Chair suggested that the group ensures that the existing text of the regulation (e.g. the test method) remains well in line with the decisions taken with the row 2 vehicles. As this was considered a bit anticipate, the Chair proposed to delay this item to the next meeting. All participants were invited to reflect about this item and to come forward with any proposals for text changes that may be needed for row 2 vehicles.

## 6.3. Revision of the proposed footnote N. 4 in the CLEPA/OICA proposal

The informal group was indeed unhappy with the text proposed for a footnote 4 per the CLEPA/OICA proposal AEBS/LDWS-17-02-Rev.1: “Approval to the entire values specified in row 1 may apply at manufacturer’s choice”

OICA then proposed an improved wording as follows: “Manufacturers of vehicles covered by row 2 may elect to gain vehicle Type Approval to the values specified in row 1; in this instance compliance shall be demonstrated with all the values contained in row 1.”

Conclusion: The group agreed with the proposed new wording for footnote 4.

The CLEPA/OICA proposal per AEBS/LDWS-17-02-Rev.1 can be found below for the best convenience.

Changes to the values of the current text of the draft regulation on AEBS (ECE/TRANS/WP.29/2011/93/Amend.1, Annex 3) are indicated in **bold** characters.

A	B	C	D	E	F	G	H	Row
	Stationary target			Moving target				
	Timing of warning modes		Speed reduction (ref. paragraph 6.4.4.)	Timing of warning modes		Speed reduction (ref. paragraph 6.5.3.)	Target speed (ref. paragraph 6.5.1.)	
	At least 1 haptic or acoustic (ref. paragraph 6.4.2.1.)	At least 2 (ref. paragraph 6.4.2.2.)		At least 1 haptic or acoustic (ref. paragraph 6.5.2.1.)	At least 2 (ref. paragraph 6.5.2.2.)			
$M_3^1$ , $N_2 > 8t$ and $N_3$	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	Not less than 20 km/h	Not later than 1.4 s. before the start of emergency braking phase	Not later than 0.8 s. before the start of emergency braking phase	No impact	12 ± 2 km/h	1
$N_2 \leq 8t^{2,4}$ and $M_2^{2,4}$	<b>Not later than the start of the emergency braking phase<sup>3</sup></b>		<b>Not less than 10 km/h</b>	<b>Not later than the start of the emergency braking phase<sup>3</sup></b>		<b>No impact</b>	<b>67+/-2 km/h</b>	2

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- 1/ Vehicles of category M3 with hydraulic braking system are subject to the requirements of row 2  
2/ Vehicles with pneumatic braking systems are subject to the requirements of row 1"  
3/ **Values shall be specified by the vehicle manufacturer at the time of Type Approval (Annex 1, paragraph 15).**  
4/ **Approval to the entire values specified in row 1 may apply at manufacturer's choice**

## 7. Other business

There was no other issue raised

## 8. List of action items

- Reflection and proposals on warning time for row 2 vehicles for both scenarii
- Speed reduction for row 2 vehicles + target speed for row 2 vehicles
- Revision of new wording of footnote 4
- Revision of current provisions which may need to be adapted to the new adopted requirements for row 2 vehicles.
- Reminder: thoughts on 2-step approach for row 2 vehicles.
- interpretation to be given to the last sentence in row 2 of the table in Annex 3, which states that "*until such values are adopted (i.e. the values for row 2 ), CPs shall refrain from issuing type-approvals for these vehicles in accordance with the 01 series of amendments to the AEBS Regulation*"

## 9. Date and place of next meetings.

Target: official document to WP29 of November 2013, hence informal document to June WP29, + official document to GRRF of Sept 2013 for amending if necessary the WP29 official document. Possible further AEBS meeting between February and Sept GRRF (could be in May 2013)

AEBS/LDWS-19	30-31 January 2013	Paris (OICA offices)
GRRF-74	19-22 February 2013	Geneva (Palais des Nations)
[AEBS/LDWS-20	April/May 2013	TBD]



121204-1658924-JR  
letter to Mr Ramos Gã

## ANNEX 1: