

## **DRAFT MINUTES**

### **8<sup>th</sup> meeting of the GRSG informal group on Accident Emergency Call System (AECS)**

Venue: Hyundai Motor Europe Technical Center GmbH  
Chairman: Mr. Denis Zagarin (RUS) (zagarin@autorc.ru)  
Secretariat: Mr. Olivier Fontaine (OICA) (ofontaine@oica.net)  
Dates: 31 March - 2 April 2015

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

#### **2. Approval of the agenda**

Document: AECS-08-01 (Chair - Secretariat)

The agenda was adopted with the addition of new documents (available on the UNECE website)

#### **3. Revision and approval of the draft minutes of the 7<sup>th</sup> meeting**

Document: AECS-07-14 (Chair - Secretariat) draft report

The minutes were approved with no change.

#### **4. Outcomes of WP29-165 (March 2015)**

The Chair informed that AECS was not discussed during the WP29 session of March 2015. The Chair of the informal group will present the progress of the AECS informal group at the May session of GRSG. There is still some discussion about the nature of the document that GRSG expects from the informal group: informal vs. official.

#### **5. Revision of the main pending items**

##### **5.1. Introduction of working document after the 7<sup>th</sup> meeting**

Document: AECS-02-02-Rev.3 (Secretariat)

The Secretary presented the document as a reflection of the status of the discussions to date.

## 5.2. Scope of the regulation

Background:

- Exclusion of
  - o Communication module
  - o Data transmission mechanism
  - o Data protection
- “if fitted” provisions for GNSS connectivity
- Exclusion of some categories of vehicles (armoured vehicles and  $M1 > 3.5$  tons)

The NL had a question about the item 1.2 (a): the communication antenna should be part of the regulation as an e-call cannot be emitted if the antenna was destroyed by the crash. Qualcomm proposed an improvement of paragraph 1.3.(a). A debate took place about whether the antenna, and its connectors should be part of the exclusion paragraph. Yet the concern of needing different antennas for different regions was raised again. The resistance to impact of the antenna will anyway be part of the regulation. After the above debate, the group agreed to keep the wording unchanged.

J proposed to change the scope and requested clarification on the interpretation of Paragraph 1.4.

J subsequently withdrew their proposal for paragraph 1.4.

Some experts raised the concern that the national regulating was subject to the manufacturer’s wish to opt for a possibility. The group agreed on the wording as adapted, subject to fine tuning about the above concern.

Conclusion: adapted wording adopted.

Paragraph 1.5.

RUS **can** accept the proposed exemptions for armoured vehicles and  $M1 > 3,5$  tons. The European Commission was of the opinion that exemptions should be granted at national level, since the criterion for exemptions should be on ground of test method adequacy: could be exempted only the vehicles to which the test method cannot apply. The group agreed to change “GVM” (Gross Vehicle Mass) into “total permissible mass”.

Conclusion:

- GVM changed into “total permissible mass”
- “laden” removed from the text throughout the document

## 5.3. AECD homologation

### 5.3.1. Base function and operation principles

Some debates took place on the definitions, in particular the definition of AECD. The group re-shaped the definition of AECD:

- Receiving/generating auto and manual signals, depending on whether the control is part of the AECD
- Vehicle location is part of AECD
- Warning signal as part of HMI

OICA presented document AECS-08-05 providing an explanatory table of the document structure.

### **5.3.2. Position determination**

GSA volunteered to extract the performance requirements from Annex 5.

OICA stressed that the proposal (e.g. paragraph 6.2.3.) may be unnecessary, and requested more time for internal revision.

Conclusion:

- GSA to prepare improved wording
- General agreement to delete the provisions covering the case of an AECD not fitted with GNSS capabilities.
- OICA and CLEPA to provide input on paragraph 6.2. (possible overregulation) before 30 April.
- References to national GNSS regulations will remain in paragraph 1.4 only.

### **5.3.3. Mean of access to mobile networks**

Conclusion: deletion of the sentence explicitly excluding requirements with regard to connectivity because would be redundant with provisions of paragraph 1.4.

### **5.3.4. AECD information and warning signal**

Vehicle master switch

OICA challenged the obligation of displaying the malfunction warning signal “at all times” of paragraph 6.5.2. and proposed the change of the word “connection” into “transaction”.

OICA voiced that there is indeed a need for a warning, but this warning should not be permanent. A debate took place on whether the tell-tale must be permanent. The Contracting Parties requested examples of non-permanent tell-tales when the fault subsists. (Paragraph 6.2.8. of UN R48 – dipped-beam headlamps: “It shall remain activated while the failure is present. It may be cancelled temporarily, but shall be repeated whenever the device, which starts and stops the engine, is switched on and off.”)

NL supported a warning at ignition of the engine.

J wondered the problem of “permanent”.

The European Commission was ready to leave it to the responsibility of the manufacturer, for the sake of making progress.

The proposed wording was cross-checked with paragraph 5.3. of Annex 6.

The European Commission proposed to share the TRL draft list of malfunctions to be checked.

RUS volunteered to propose a pre-crash warning signal test procedure (and definition of the cases when the signal is necessary) for the next meeting. RUS invited the interested parties to take part to this work. OICA warned that electronic systems may have an infinite number of possible failures. If the list of minimum number of items (e.g. 10 items) were read as an exhaustive list, then the manufacturer would not be taken as liable on any other additional failure.

TRL informed about their work on a paper-based declaration on the warning strategy with proper justification from the manufacturer.

RUS suggested a mix of paper-based declaration and some simple tests like e.g. antenna disconnection etc.

D, as Technical Service, could not accept a simple declaration of the manufacturer: the Technical Service cannot trust a simple statement from the manufacturer.

Conclusion:

- Proposal, inspired from UN R48, adopted.
- European Commission and RUS to table their work on the content of the self-check at the next meeting; task force of interested parties to present their approach at next meeting.

### **5.3.5. Power supply**

A debate took place on the possible reference to existing standards (GSM: 3GPP TS 44.018; UMTS: 3GPP TS 25.331).

The European Commission wondered whether the text assumes that the AECD is tested on a back-up battery.

RUS was of the opinion that it makes sense to keep “autonomously” (i.e. de facto making the back-up battery mandatory) as if the master battery may disconnect in real crashes. OICA pointed out that some (future) vehicle may have power sources located in a protected part of the vehicle. This raised the question of how far the group wants the simulation of the reality to go within this regulation. In addition, some future power sources (fuel cells, super-capacity, etc.) should be taken into account in the provisions.

The experts considered that either the procedure of UN R94/95 is literally followed, and then a fake battery is mounted into the vehicle (in this case the real battery must be mounted into the vehicle right after the crash test), or the test is performed on the AECD as a separate component.

The group convened on the following equation:

- At device level: if fitted approach, device test.
- At vehicle level:
  - Verification of performance before impact (perhaps nonsense as this is assumed to be fulfilled anyway)
  - State of power source and its relevant connections after impact.

OICA suggested to solve this issue at approval procedure level: if AECS component test is performed with external power supply, then this external power supply must be demonstrated at Part II (vehicle test).

D challenged the assumption that R94/95 tests are performed with a dummy battery, on the contrary they are usually conducted with real batteries for assessing fire dangers, centralized door condemnation post-crash functioning, etc. The Chair confirmed this point of view.

OICA pointed out that the energy necessary to fulfil the 5-60-5 test is 5 times contained in a simple AA battery. The delegate wondered the logics of spending so much meeting time in this discussion.

During the debates, the group established the following tables as tools for achieving the best possible performance requirements.

AECD power supply performance requirements table – option 1

1		Part I		Part II		Part III	
2		Pre-sled test	Post-sled test	Pre-crash test	Post-crash test	Pre-crash test	Post-crash test
3	AECD fed with autonomous (integrated) power source	NA because part of other AECD performance tests	5-60-5 fed with autonomous (integrated) power source	NA because AECD is supplied by the vehicle power source, possibly via the autonomous power source	NA because AECD was approved to Part I		5-60-5 with vehicle power source (e.g. main vehicle battery)
4	AECD fed without autonomous power source (e.g. main vehicle battery)	NA because no clue on external power source	NA because no clue on external power source	NA because part of other AECS performance tests	5-60-5 fed with vehicle power source		

AECD power supply performance requirements table – option 2

1		Part I		Part II		Part III	
2		Pre-sled test	Post-sled test	Pre-crash test	Post-crash test	Pre-crash test	Post-crash test
3		The applicant shall demonstrate to the satisfaction of the Technical Service that the performance of the 5-60-5 are fulfilled after the impact.					

The group elected Mr. Meilikhov (RUS) as pilot for tabling an acceptable proposal for the last day of the meeting.

RUS presented their work per document AECS-08-10.

Q&A:

- “all” systems: OICA pointed out that the proposed procedure is not related to the existing RUS procedure. OICA deplored the extreme worst case of the proposal.
- The proposal was considered unrealistic for e.g. electric vehicles, to which the complete power supply architecture would make UN R94 to be re-designed.
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- Paragraph 16.6.2.: the experts questioned **if the vehicle is not subject to the test under Regulation No. 94, and is subject to the test under Regulation No. 95, then the logic of ~~not mandating UN R95 crash test, but~~ mandating the only sled test for the main battery according to Annex 4;**
- Paragraph 16.6.3.: the experts questioned the logic of not mandating UN R94/95 crash tests, but mandating sled test for the main battery. The AECS should not re-invent the test procedure for the vehicle.

- Paragraph 16.6.: some experts found not logical to address in Part II only the cases when the AECS is not subject to the sled test while this case should occur as well in Part I.

OICA explained their concerns about test procedure vs. the energy architecture and the vehicle energy strategy. OICA requested time to study the proposal.

The Secretary questioned the necessity of such complex test procedures for an item that was considered quite simple until the day before.

Conclusion: item to be re-discussed at the next meeting (AECS-09, July 2015).

### 5.3.6. Resistance to impact

TRL presented their proposal for a sled test AECS-08-04

Justifications for having high severity: AECS is no secondary safety, rather a system that is used when the secondary safety systems failed to protect the occupants. The expert clarified that the upper level of the corridor is present for the sake of repeatability and reproducibility, rather than as a required severity.

Q&A:

- Which component to include in the test? The components tested in the photo were selected on the criterion of availability. For the European Commission, good justifications would be needed for avoiding that some components are included, e.g. changing the design of an existing component for the purpose of the test, if too expensive.
- 2 different types of battery were included (button cell). The European Commission was ready to provide further information on the batteries.
- Orientation of the component was decided for the sake of simulating different mounting in different vehicles
- Upper boundary of the proposed curve can be exceeded, if the component succeeds the test.
- J suggested that only one orientation would be sufficient, at 77G acceleration
- OICA informed that:
  - o Some components in the vehicle are design for withstanding 30-40 G, and their behaviour above these values is not guaranteed. TRL agreed to take this information into account.
  - o Not all test facilities are able to conduct such test. TRL acknowledged this fact.
  - o Challenging the 1,3 safety margin: this margin and the upper level are too high, knowing that the manufacturer must have its own internal safety margin (15/20%) for ensuring that the vehicle succeeds the approval tests. TRL was convinced the levels are relevant because the decelerations are met in the real world.
  - o Some Contracting Party will very soon apply the AECS regulation, i.e. the vehicles that will have to comply are currently under development; re-orienting the development at a late stage can be too demanding for the manufacturer in relation to the delays and safety benefits.

TRL proposed to 1<sup>st</sup> decide on the levels of deceleration, then having samples available for testing, then arriving with a final proposal. The delegate said that without information on the cost/benefits rate for re-designing the components, there is no possibility to make an informed decision.

The Chair pointed out that there is only one proposal from TRL and some experience from RUS, but only assumptions from the manufacturers.

D found the TRL proposal far too severe. The proposed highest deceleration would change the vehicle into dust. The behaviour of the vehicle at UN R94/95 level will be totally different to that at 100G. D proposed to reduce the proposed 85G to a level more realistic to vehicles (60G is already a high level). D was of the opinion of lowering the lower corridor to 60G, which already would cover most existing crashes. The normal deceleration a brain can withstand is 80G/3ms.

The group discussed the best strategy to proceed.

Define a draft corridor at this meeting, to be confirmed at next meeting, vs. postponing the decision, with clear tasks to all parties until the next meeting.

OICA supported the J proposal, i.e. the pulse as in the TRL proposal minus the safety margin (65 vs. 77G), limited to the data communication necessary components. Additional components like microphones and speakers (voice communication system etc.) would be added as a second mandate of the group i.e. 01 Series of amendments of the regulation. OICA needed internal confirmation whether the proposed decelerations are realistic, in particular for parts that are not designed for withstanding these decelerations.

D proposed to put the lower corridor at 60G

J could accept such corridor, but questioned why excluding the speakers and microphones.

RUS committed to provide information about the resistance to high deceleration of the current voice communication components, **if such information becomes available**.

The European Commission committed to provide the corrected values for ensuring a good start.

Some further discussions took place on the amount of AECD components to be introduced into the sled test:

- components necessary to data communication

vs.

- all components but those necessary to voice communication

CLEPA pointed out that the more components are included into Part I, the less there is chance that suppliers apply to Part I.

J found antenna essential for data communication, and agreed that voice communication components are not essential and hence postponed to a 2<sup>nd</sup> step.

TRL stressed that, with regard to HMI, only the “status indicator” would be necessary on the sled test, while the “failure indicator” could be excluded. Yet the expert recognized some practical problem in assessing the status signal post-crash.

RUS supported a flexible approach.

D pointed out the difference between the sled test and the crash test. The HMI should only be tested according to a crash test event, rather than the sled test conditions.

OICA suggested the addition of a dispatching sentence in paragraph 6.7.

The European Commission suggested to amend the AECD definition, such that some items “may” be part of the AECD. This was supported by RUS.

J challenged a change to the definition, but supported that HMI components are excluded from the AECD sled test.

Some experts suggested that this be treated in the homologation procedure, as for part of the couple formed by paragraph 14.1/Annex XX paragraph 9.

The group established the following amendments to Annex XX

#### 9. Brief description

AECD information and warning signal: yes/no.....

Hands-free audio equipment (micros and speakers): yes/no .....

Back-up battery: yes/no.....

Network access device antenna: yes/no .....

GNSS antenna: yes/no .....

GNSS receiver: yes/no .....

X. Component was tested according to the sled test of Annex 4 (components necessary for sending the MSD are by default tested to Annex 4 –TCU, back-up battery, AECD information signal, GNSS antenna when internal to TCU, GNSS receiver when internal to the TCU):

- AECD warning signal: yes/no.....
- Hands-free audio equipment (micros and speakers) : yes/no .....
- GNSS antenna (when external to the TCU): yes/no .....
- GNSS receiver (when external to the TCU) : yes/no .....

Conclusion:

- Agreement on amended sled test pulse at 65/77G
- Limited to components necessary to data communication for a 1<sup>st</sup> phase (detailed test procedure to be discussed at Annexes 4 and 6 level)
- Other components (e.g. voice communication) to be further investigated for introduction into a 01 series of amendments
- RUS to provide information about the resistance to high deceleration of the existing voice communication components if available
- European Commission to provide amended sled test pulse corridor.
- Secretary to introduce the amended procedure into Annex 4

### **5.3.7. Hands-free audio performance**

CLEPA was of the opinion that this paragraph should be moved to Part II of the regulation. RUS deplored the late notice of the ITU recommendation (AECS-08-03). RUS favoured an “instrumental approach vs. a subjective approach. RUS was keen to somehow integrate references to the ITU recommendation. The negotiations are already taking place at ITU level, which can be trusted. The expert suggested that Industry review in May/June the final version of the recommendation, for adoption of some wording at the July meeting. OICA was of the opinion that the audio performances should be minimum requirements rather than maximum requirements as proposed in the ITU recommendation. Some parameters are not yet defined in the ITU, and the standard is not yet officially published, i.e. the recommendation should not be added to the AECS regulation. The expert suggested that the AECS informal group “cherry pick” the elements that are of interest in the ITU recommendation.

OICA and CLEPA pointed out that the manufacturer and the supplier cannot guarantee quality in bodies (e.g. PSAP) that they cannot control.

The group agreed that the wording and the provisions will be improved at a later stage.

Conclusion:

- Need for further investigation of the ITU recommendation
- If not adopted, then Industry to proposed relevant provisions

### **5.4. AECS homologation**

This item was not discussed during the meeting.



### **5.5. Vehicle homologation with regard to AECS**

This item was not discussed during the meeting.

## **6. Schedule for further IG meetings**

The informal group decided to present a status report to GRSG-108 (May 2015), then an official document to GRSG-109 (September/October 2015). This official document will be then further amended by the 10<sup>th</sup> meeting of the informal group in September 2015.

- 9th meeting      7-9 July 2015      St Petersburg (with the support of the Ministry of Foreign Affairs)
  - 10<sup>th</sup> meeting      2-4 September 2015      Brussels or Paris
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