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4th Meeting: WP29 - GRSP – Informal WG on Electrical Safety (ELSA)

Paris – Offices at OICA

12. November 2008

14. November 2008

Meeting Report

Agenda (see ELSA-4-1)

The agenda was adopted.

Meeting Minutes of the Third Meeting (see ELSA-3-4)

Minutes of the third meeting were approved.

Action Items

At the end of this report the action items are listed in table 2 together with the organization/country responsible for each item.

General

For the fourth meeting OICA compiled the following documents:

ELSA-4-4	OICA proposal in-use electric safety
ELSA-4-4-Annex 1	OICA in-use electric safety comparison between old and new version
ELSA-4-5	OICA proposal post-crash electric safety
ELSA-4-5-Annex 1	OICA post-crash electric safety comparison between old and new version

Document 4-4-Annex 1 shows the “in-use” requirements out of ELSA-3-2-Rev.1 (outcome of the third meeting) with the proposed changes by OICA.

Document 4-4 is a consolidated document from OICA based on document 4-4-Annex 1.

Document 4-5-Annex 1 shows the “post-crash” requirements out of ELSA-3-3-Rev.1 (outcome of the third meeting) with the proposed changes by OICA.

Document 4-5 is a consolidated document from OICA based on document 4-5-Annex 1. But from § 4 onwards the content was not discussed and agreed by the OICA members.

(A) Electrical Safety Provisions for Vehicles “in-use” (see ELSA-4-4-Rev.1)

Regarding the status of the open issues out of the third meeting please see Table 1 attached to this document.

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In document ELSA-4-4-Rev.1 all changes to the text are highlighted in red. Furthermore all action items are highlighted in green and in addition listed in Table 2 in the annex of this document.

For better understanding, the following definitions are added to § 2.

Definitions:

- Electric power train
- RESS
- Energy conversion system
- Electronic converter
- Coupling system for charging the RESS
- External electric power supply
- On-board isolation resistance monitoring system
- Open type traction battery (out of the Japanese attachment 110)

There is still a reservation from the USA regarding the upper limits of 1.500 V and 1.000 V used to define High Voltage (2-22). OICA agreed to approach the chairman of IEC TC 69 to get an explanation for the limits.

Under § 3-3-1 second paragraph the limit of 0.2 amperes was discussed. Since 0.2 is mentioned in the existing ECE R100 the ELSA group decided that 0.2 should stay.

§ 3-3-2 should be structured with the following sub-paragraphs:

- 3-3-2-1 Electric power train consisting of separate DC- or AC-buses
- 3-3-2-2 Electric power train consisting of combined DC- and AC-buses

Furthermore the mentioned thresholds of 500 ohms/volt and 100 ohms/volt are still under study reservation by the USA.

Regarding the requirements of RESS under paragraph 4 it was agreed by the group that “protection against excessive current” and “accumulation of gas” have to be addressed.

Since paragraph two of 2-1-2 was not acceptable for the TÜV representative, he agreed to develop a proposal for improved wording.

Note 1 of 2-2-3-5 has to be discussed between OICA and TÜV.

The old Attached Sheet 2 with the title “FUNCTION CONFIRMATION METHOD OF POWER SUPPLY SHUT-OFF AT TIME OF ELECTRIC LEAKAGE” can be replaced by a new Attached Sheet 2 with the title “Confirmation Method for Functions of On-board Isolation Resistance Monitoring System”.

In the new Attached Sheet 3 the description of the test wire (IPXXD) is wrong. The existing key No. 3 will be deleted and the key No. 4 will become No. 3.

The USA will identify the paragraphs which require explanation or justification for the rule making process in the USA.

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(B) Electrical Safety Provisions for Vehicles “post-crash” (see ELSA-4-5-Rev. 1)

Regarding the status of the open issues out of the third meeting please see Table 1 attached to this document.

In document ELSA-4-5-Rev.1 all changes to the wording are highlighted in red. Furthermore all action items are highlighted in green and in addition listed in Table 2 in the annex of this document.

For better understanding the following definitions are added to § 2.

Definitions:

- Electric power train
- “RESS”
- Energy conversion system
- Electronic converter
- Coupling system for charging the RESS
- Passenger compartment
- Luggage compartment
- Direct contact
- Live parts
- Indirect contact
- Exposed conductive part
- Electrical circuit
- Working voltage
- Electrical chassis
- Solid insulator
- Barrier
- Enclosure
- High Voltage Bus

Furthermore OICA has to check whether or not a definition of “exposed conductive part” (2-13) is necessary.

While a “barrier” and an “enclosure” could be understood to be the same, the question came up whether one of them could be deleted. This will be checked by OICA.

Regarding the upper limits (1.500 V and 1.000 V) used for the definition of high voltage see the “in-use” part of the Meeting Minutes.

In the whole document “insulation” has to be replaced by “isolation” where appropriated.

In § 3-1 the question whether 5.0 liters of electrolyte spillage is still realistic was discussed. OICA agreed to deliver information about past and current battery designs.

In § 3-2 it has to be checked by OICA whether the wording out of FMVSS 305 as proposed could be used.

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Regarding § 3-3 “Electrical Safety” the ELSA group needs input from SGS regarding which of the alternatives should be considered after a crash. Therefore it was agreed that the secretary of the group should propose an informal document for the 44th GRSP. This proposal should be distributed to the members of the ELSA group for comments. This document will then be presented by the chairman of the group during the next GRSP meeting in Geneva.

(Remark: The document was presented by the chairman of the ELSA group during the 44th session of GRSP.)

In § 4-2 “normal operating voltage” is mentioned. There is still the question whether or not a definition is necessary. This will be checked by OICA.

Under § 4-3 OICA together with JAISIC agreed to come up with a proposal concerning an energy conversion system.

For § 5 a justification for the alternative test- and analysis methods has to be delivered by OICA.

In § 5-2 the two sentences highlighted should be checked by OICA. Furthermore the USA will provide a justification why the measurement shall be made 5 seconds after the crash.

In § 5-3 the highlighted part has to be re-worded by OICA.

In § 5-4 the thresholds t_0 and t_1 have to be defined by OICA.

In § 5-5-1 a table 1 is mentioned but is missing from the document. Therefore OICA agreed to provide the group with the information described in this table.

In § 5-5-2 the question was raised what does it mean that the access probe shall not touch the live parts. The following discussion made clear that the wording is not precise enough. Therefore OICA has to think about a re-wording of this part. Furthermore OICA should consider whether the live parts of the vehicle have to be listed in a form or not.

Date and venue of the next Meeting

The following was agreed by the group:

Date: 22. – 23. January 2009

Venue: “KTI” in Budapest

Thomas Goldbach,

17.12.2008

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Tabelle 1

Subsection "in-use"		
Where	What	Who
§ 2	Definitions should be listed alphabetically Status: Will be done by the secretary as soon as the document is finalized.	Secretary of the group / open
§ 2	"traction battery" vs. RESS Status: "traction battery" should be deleted and "RESS" introduced	OICA / done
§ 2	exposed conductive part Status: "non-exposed conductive part" should be deleted	OICA / done
§ 2	IPXXB and IPXXD out of ISO 20653 Status: The protection degrees are now described in Attached Sheet 3	OICA / done
§ 3-1	Can it be deleted? Status: No deletion but re-wording.	OICA / done
New § 3-2-4	Improved wording Status: Can be deleted	OICA / done
????	Possible new general safety strategy (live parts became equal or below DC 60 V or below AC 30 V immediately) Status: Idea is incorporated in § 3-3-2	OICA / done
New § 3-2-5	Rewording of the sentence Status: § 3-2-5 is now § 3-2-4. Paragraph is re-worded.	OICA / done
	necessity to specify the color orange in more detail Status: Detailed definition of orange is not necessary.	OICA / done
§ 3-3-2	Justification for "such means as" Status: Wording can be deleted.	OICA / done
§ 3-3-3	Connection to the ground in the sub-section "in-use"? Status: Paragraph has to stay and is re-worded.	OICA / done

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???? 2-3 “Attached Sheet 1” “Attached Sheet 2”	Deterioration of the coolant may change the isolation resistance; proposal to solve the problem Status: Problem is now addressed in § 3-3-2-2 together with Attached Sheet 2	OICA / done
§§ 5. & 6.	OICA should re-discuss the necessity of §§ 5. and 6. and come up with a justification what the group should do Status: §§ 5 and 6 are now §§ 4 and 5. Both §§ should stay in the document.	OICA / done
Subsection “post-crash”		
Where	What	Who
§ 2.	Definitions should be listed alphabetically Status: Will be done by the secretary as soon as the document is finalized.	Secretary of the group / open
§§ 2.1 & 2.2	See §§ 5. and 6. of subsection “in-use” Status: §§ 2.1 and 2.2 are now §§ 3-1 and 3-2 and both should stay.	OICA / done
§ 2.3	Improved wording of § 2.3 “Electrical Safety” Status: § 2.3 is now § 3-3 and is completely re-worded.	OICA / done
§ 3.1	Definition of “normal operating voltage” necessary? Status: § 3.1 is now § 4-2. Question still has to be answered.	OICA / open
§ 3.2	Proposal for new wording Status: § 3.2 is now § 4-1 and has been re-worded.	USA / done
§ 4.2	corresponding revisions of § 2.3 should be adopted in § 4.2 Status: The test sequence was deleted.	OICA / done
§ 4.4	Merge drawings if possible Status: Is not possible.	OICA / done

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Table 2

“in-use”		
Where	What	Who
2-22	Contact with chairman of IEC TC 69 for a justification regarding the upper limits (1.500 V d.c and 1.000 V a.c.)	OICA
2-22	Study reservation form USA regarding the 1.500 V d.c. and 1.000 V a.c.	USA
3-3-2-1& 3-3-2-2	Study reservation form USA regarding the 100 ohms/Volt and 500 ohms/Volt thresholds	USA
Attached Sheet 1 2-1-2	Proposal for a re-wording of the second paragraph	TÜV
Attached Sheet 1 2-2-3-5	Check whether the wording of NOTE 1 has to be changed	TÜV together with OICA
Whole document	Where does the USA need an explanation or justification for their rule making process in the USA ?	USA
“post-crash”		
Where	What	Who
2-13	Do we need this definition ?	OICA
2-18 / 2-19	What is the difference between “barrier” and “enclosure” ? Is it necessary to have both definitions ?	OICA
2-22	Study reservation by the USA regarding 1.500 V d.c. and 1.000 V a.c.	USA
3-1	Question whether 5.0 liters of electrolyte spillage is still realistic. Therefore information about the battery design in the past and the future is necessary.	OICA
3-2	Check whether the requirements out of FMVSS 305 is o.k. in § 3.2	OICA
3-3	Informal document for the 44 th session of GRSP	Secretary of the group / done
3-3	Advise from SGS witch alternatives could be agreed	SGS
4-3	Proposal regarding energy conversion system	OICA / JAISIC

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5	Justification required why alternative test and analysis methods should be allowed.	OICA
5-2	Both sentences in green have to be checked	OICA
5-2	Why 5 seconds ?	USA
5-3	Green part of the text has to be re-worded	OICA
5-4	t0 and t1 have to be defined to be able to integrate the product	OICA
5-5-1	Table 1 is missing	OICA
5-5-2	What does it mean that the access probe shall not touch the live parts ? Wording is not precise enough. It may be necessary that the live parts of the vehicle have to be listed in a form.	OICA