UN ECE Regulation No. 107
7th meeting of the GRSG Informal Group on
Service Doors, Windows and Emergency Exits of buses and coaches
29-30 November 2011
Federal Ministry of Transport, Building and Urban Development Division LA 20 - Innovative and communicative Vehicle Technologies, Automotive Engineering (Vehicle safety)
Robert-Schuman-Platz 1 D - 53175 Bonn
Germany

DRAFT REPORT

1. Welcome by the Chair

Dr. Richard Damm, as representative of the German Ministry of Transport, welcomed the participants to the meeting..

The Chair thanked Dr. Damm and the attendees introduced themselves.

The representatives of NL, CLCCR and Solaris were apologised.

2. Approval of the minutes of the 6th meeting

Document: SDWEE-06-09 (Secretariat)

The minutes were adopted with no comment.

3. Adoption of the Agenda

Document: SDWEE-07-01 (Secretariat)

The following documents were added to the agenda:
- SDWEE-06-04-Rev.1 (Mr. McKenzie)
- SDWEE-06-02 (Mr. McKenzie)
- SDWEE-05-05 (D)
- SDWEE-04-06 (Mr. McKenzie)
- SDWEE-07-03 (Alexander denis)
- SDWEE-07-04 (VanHool)

4. Revision of working documents

Document: SDWEE-02-07-Rev.4 (Secretariat)
SDWEE-06-03 (NL)
SDWEE-06-08 (Mr. McKenzie)
SDWEE-06-04-Rev.1 (Mr. McKenzie)

Background:
- SDWEE-02-07-Rev.4 provides the state of play of the work performed by the informal group to date:

- was completely revised by the 6th meeting of the informal group (Warsaw, September 2011)
- Remaining pending issues were expected to be solved at this 7th meeting.

- SDWEE-06-03: request for input about interpretation of the text with regard to the permissible obstruction of the passageway.
- SDWEE-06-08: recommendation to follow some principles in designing the emergency instructional information signage.
- SDWEE-06-04-Rev.1 proposes draft Requirements for Emergency Lighting

a. Number of escape hatches relative to the number of passengers

Paragraph 7.6.1.11.:
The informal group confirmed the proposed figure of 30 passengers as a threshold for adding a second hatch.
For vehicles of more than 60 passengers however, in particular when articulated, it was found already challenging to find place for 2 hatches even on conventional vehicles (A/C, auxiliary accommodations, etc). Mr. Becker proposed to limit the quantity of mandatory hatches to two for all vehicles above 30 passengers (i.e. delete the last row from the table in document SDWEE-02-07-Rev.4.
The group in addition found non relevant to elaborate, in case of requirements for 3 hatches, provisions about location etc.

Conclusion:
- agreed to propose provisions for 2 hatches only,
- deletion of the [ ].

b. Number of staircases relative to the number of passengers

Paragraph 7.6.1.16.:
The group agreed to decrease the threshold of vehicles of Class II from 50 passengers to 30 passengers.

c. Service door in the rear face

Paragraph 7.6.2.1.1.4.:
The group found no need for the change proposed at the 6th meeting and decided to reverse back to the current text of the regulation.

d. Escape hatch on vehicles of class A

Paragraph 7.6.2.2.4.:
HUN questioned the criterion for the Technical Service for deciding whether the windscreen is or is not an emergency exit. However, it was pointed out the Technical Services do not currently face any problem. HUN was keen to add explanatory examples and proposed to add a text as follows:

> *"7.6.2.2.4. … or in the front face of the vehicle (through the windscreen). It has to be clearly shown and marked which part of the windscreen will provide the minimum area prescribed in paragraph 7.6.3.1.4. and how to achieve it (e.g. pushing out the windscreen or its part, cutting it by an appropriate electric hand tool or by other means)."*

The experts raised the following objections:
- Problem of finding a skilled person to cut the windscreen (driver might be inoperative)
- Problem of losing the good solution of rear face emergency exit.

- The performance requirements for the front face emergency exit should be aligned on the ones for the rear face.

The group acknowledged that there is currently no known technology for making the front face windscreen emergency exit. It was however considered relevant to keep this possibility in the regulation in order to permit the manufacturer to introduce this solution when relevant.

Conclusion: current text remains unchanged.

e. Door in the rear face

Paragraph 7.6.2.7.:
The change proposed per document SDWEE-02-04-Rev.4 was confirmed by the informal group, as NL will have the opportunity to provide input at a later stage.

Conclusion: NL to raise comment if found appropriate.

f. requirements applicable to the non-regulated hatches

Paragraph 7.6.2.8.:
The Experts provided input concerning the necessity for the non-regulated hatches to respect the requirements about their mutual separation.

Conclusion: new wording proposed per document SDWEE-02-04-Rev.4 adopted by the informal group.

g. new dimensions of the emergency doors

Paragraph 7.6.3.1.2.:
Mr. McKenzie provided input concerning the proposals for new dimensions of emergency doors and informed that the data are coming from the aviation Industry. He furthermore committed to later provide the relevant references.
MAN raised the problem of the doors at the lower deck of double deck vehicles. Spain raised the point of the current gauges for passenger compartment which currently are stopped at the door (1400 mm height), and proposed the values of 1450 X 600 mm. The group acknowledged this proposal as making sense because 1450 mm represents a 50%tile male.

Conclusion: values of 1450 X 600 mm were adopted for the emergency doors.

h. new dimensions of the emergency windows

Paragraph 7.6.3.1.3.:
The group acknowledged the lack of data favouring the change of these dimensions.

Conclusion: SDWEE-07 agreed with the current text of the paragraph.

i. emergency window situated in the rear face of the vehicle

Paragraph 7.6.3.1.4.:

HUN pointed out that the rear window is a very practical emergency exit when the vehicle is on its side. HUN was keen to delete the 1st option, keeping the 2nd option with dimensions improved to [1450 X 500] mm.

The group however recalled that the proposed dimensions would be too challenging, even more in the future because of the space necessary for complying with the new emission requirements. In addition, the new technologies like hybrid will also take additional space. The experts from Industry also informed that there is a real need for both options as they address completely different vehicles.

Conclusion: the informal group decided not to change the current text of the regulation.

j. Accessibility of the service doors

Paragraph 7.7.1.: see item 5 below

k. Dimensions of the hatch gauges

Paragraph 7.7.2.:

The informal group preferred to keep the current dimensions of the hatch gauges as their dimensions are close to those of the revised emergency doors. In addition, it was considered practical for the Technical Services not to change the dimensions.

l. Components situated in an escape path

Paragraph 7.7.3.3.:

D provided an improved wording prohibiting that the components situated in an escape path be removable only per a movement in the direction opposite to the direction of egress:

> *"In the case of an emergency window in the rear face of the vehicle, intrusion of headrests or other parts of seats shall be allowed provided they can be easily moved out of the way. The main action for moving the components from the escape path shall not be opposite to the direction of egress."*

The word "easily" was questioned for its ambiguity. However the group acknowledged its usage in other parts of the regulation (24 times).
It was recalled that the issue addresses rear face emergency windows only and suggested to move the requirement in the preceding paragraph.

Conclusion: new wording adopted in paragraph 7.7.3.2.

m. Emergency lighting

Document: SDWEE-06-04-Rev.1

Paragraph 7.8.3.:
The experts commented the technical provisions provided by document SDWEE-06-04-Rev.1 on emergency lighting.

It was pointed out that adding a battery for such an improbable event is too challenging. In addition, it was considered not relevant as there is no reason why the main battery would have failed at the time of an accident. Hence the group recommended to connect the emergency lighting circuit directly to the main vehicle battery.

Sensing the decelerations was also recognized very challenging, even if there is a dynamic driving help like EVSC.

It was proposed to simply require that all the interior lights are automatically switched on. Yet in this case, the requirement of 90 minutes illumination would be also quite challenging. It was proposed to limit this time to 30 minutes as a more reasonable value. The use of LED (low consumption) could help, taking into account that this technology is however still under development: their light is very concentrated and needs to be slightly spread for fulfilling the current requirements.

Another, opposite, approach was proposed per making the emergency exit self-illuminated (frame illuminated by some LED band). This was considered however over-demanding, because emergency windows are used only when the vehicle is standing on its wheels and in this case there are at least two other possibilities for escaping. HUN was keen that the emergency hatches and the emergency exit at the rear face of the vehicle be illuminated.

It was mentioned that lighting uniformity is as important as the amount of light in order to avoid the eyes to always adapt to a new illumination level when moving along the gangway. In addition, the situation when there is no lighting at all anymore should be addressed, i.e. when photo-luminescent systems are the only ones remaining.

The situation of the vehicle being on its side was addressed as well. The lighting of the emergency exits was considered already enough as a 1st step. A 2nd step could be the illumination of the paths when the vehicle is standing, and a 3rd step, in the case the vehicle is lying on any of the sides.

PL was keen that the emergency switch of UN R36, intended to reduce the risk of fire after the vehicle has come to a standstill, be re-introduced in UN R107, with proper anti-misuse provisions. The provisions in UN R36 however date 30 years and the society evolved a lot during this time.

Industry was keen to have the opportunity for a further revision of the text and the consideration of the necessity for transitional provisions before the group makes a final decision on the requirements for the emergency lighting. It was then decided to review the document SDWEE-06-04-Rev.1 at a next meeting (see item 6 below).

n. Construction principles for the safety signs

Paragraph 7.19.1.1.2.:

The text of the paragraph was slightly improved. However the question was raised that, in the case of a big vehicle, the number of such photo-luminescent emergency signage would make the ambiance too much illuminated hence uncomfortable for the passengers. The informal group lacked experience on this.
Another issue was the unwanted reflection of these signs on the windscreen, which could jeopardise the vision of the driver. The group agreed that the durability of these signs is beyond its responsibility.

Conclusion: Industry to internally check the consequence of the number of self-illuminated signs.

o. Safety signs in case of curtains/blinds

Paragraph 7.19.1.3.:

Mr. Becker recalled his concern that, when printed on a curtain, the sign would not comply anymore with the relevant ISO standard (photo-luminescent paintings). The group, while acknowledging the concern, was of the opinion that sufficient options exist for the manufacturer to comply with the provisions without facing this problem.

Conclusion: no change to the text proposed in document SDWEE-02-04-Rev.4

p. Emergency controls

Documents: SDWEE-06-02 (E)
SDWEE-05-05 (D)
SDWEE-04-06 (Mr. McKenzie)
SDWEE-07-03 (Alexander Denis)
SDWEE-07-04 (VanHool)

Background:

- SDWEE-05 recognized some safety improvement in harmonization of the movement of the emergency exits controls. Industry conceded some costs efforts for the sake of this safety improvement, and the informal group agreed on a mandatory rotary control.
- SDWEE-05-05 proposes some amendments to the text of the regulation for mandating a power-operated service door control to be operable via a rotary movement in the case of an emergency
- SDWEE-04-06 proposes draft recommendations on the functionality of door release devices
- SDWEE-06-02 proposes that all controls be easily operated, keeping some flexibility between three possible movements for their operation.
- SDWEE-07-03 provides the dimensions of some of the emergency exit controls in the current Alexander-Denis production
- SDWEE-07-04 provides the dimensions of some of the emergency exit controls in the current VanHool production

Mr. Borros introduced the document SDWEE-06-02 stressing that the rotary movement in case of emergency could be difficult in some circumstances and proposing the choice between 3 movements for the interior control.
Mr. McKenzie recalled the document SDWEE-04-06 coming from the aviation Industry, and pointed out that the rescue teams could find benefits in having a harmonized movement for the exterior emergency control, while some flexibility would be appreciated for the interior control.
Plaxton voiced that the currently proposed value of 2Nm is far too low for mechanical interior emergency controls. Inputs from VanHool indeed indicate that state of the art is at values of about 10Nm (pneumatic valve).

The group reiterated the debate about the key criterion of whether the movement would have to be harmonized. The informal group hesitated to confirm again the decision of SDWEE-05 relative to a harmonized, rotary movement. The experts were well aware that such confirmation could jeopardise the introduction of future better solution. It was mentioned that a lot of the other emergency movements in the society are by a “pushing” movement.

The group faced the situation of choosing again a harmonized movement.

In addition, it was felt beneficial that the mandatory movement be in the "direction" of door opening, making the movement natural, i.e. pulling for external control, and pushing for interior control.

Further debates, and the information from SMMT that handicapped persons would face difficulties in operating a rotary control (result of further consultation held within the time between the previous meetings and the current meeting), led to a new decision such that the interior control should be a "push" movement. This was challenged by Germany which was still in favour of keeping the previous decision of a mandatory rotary control.

The group established a table aiming at summarizing the pros and cons of each technical solution with regard to each parameter (see below). After some debate, it was agreed that interior and exterior emergency controls can be considered equivalent with regard to the parameters and decisions in stake.

<table>
<tr><th></th><th colspan="2">Interior and exterior emergency control</th><th>Comment and justification</th></tr>
<tr><td rowspan="2">Mandatory movement</td><td>decision</td><td>Justification</td><td rowspan="2">Turning to a push button would imply relevant transitional provisions. Operation of the control should anyway be well explained and easy to do.
Mandatory rotary control for exterior is challenged by Mr. Becker because consideration of exterior emergency controls was not the task the group gave to itself. This would provoke unnecessary costs for the manufacturers. MAN committed to provide input on this issue.
It was suggested to let flexibility for both interior and exterior controls.</td></tr>
<tr><td>None (movement kept optional to the manufacturer)</td><td>Interior rotary emergency controls may be difficult to be used by disabled people hence should not be mandated.</td></tr>
<tr><td>Permitted movement range</td><td colspan="2">Angular motion: [90°] in total, permitting 2 x 45°
Linear motion: [between 3 and 38 mm]</td><td>To be internally checked
3-38 mm is coming from the aviation. This would prohibit sensitive sensors.</td></tr>
<tr><td>Mandatory Colour</td><td colspan="2">Red or Red with yellow background</td><td>no need for further definition of colour</td></tr>
<tr><td>Maximum torque</td><td colspan="2">[15] Nm</td><td>To be internally checked. Criterion is "control to be easily operated"</td></tr>
<tr><td>Maximum force</td><td colspan="2">[35] N</td><td>To be internally checked.
Criterion is "control to be easily operated"
Plaxton current value: 102 N</td></tr>
<tr><td>Minimum dimensions</td><td colspan="2">Rotary: Ø [50] mm
Non rotary:
– Push button: Ø [20] mm
– Lever: [100] mm length</td><td>Square-like button do also exist. In this case the value applies to the diagonal</td></tr>
<tr><td>Misuse prevention</td><td colspan="2">copy/paste service door provision, i.e.: "The emergency doors shall be prevented from opening if the vehicle moves at a speed</td><td>Current national interpretations are sometimes contradictory (mandatory vs. prohibited coverage).
7.6.7.5. of Annex 3:
"7.6.7.5. Emergency doors shall be</td></tr>
</table>

	Interior and exterior emergency control	Comment and justification
	higher than 5 km/h"	proofed against unintentional operation. However, this requirement shall not apply if the emergency door is locked automatically when the vehicle is moving at a speed exceeding 5 km/h." (emergency doors) 7.6.5.1.8. The doors shall be prevented from opening if the vehicle moves at a speed higher than 5 km/h" (power-operated service doors) The experts committed to internally check the relevancy of mandating some coverage above the interior and exterior emergency controls (referring to paragraph 7.6.5.1.6.)
Free space around the control	The form of the device and the size of any apertures or housings shall be capable of allowing easy access and operation of the device by a gloved hand having a closed-fist width of [140 mm].	The experts committed to internally check the relevancy of the provisions for a free space around the control.

Mr. McKenzie committed to provide input from the manufacturers within SMMT which raised the issue of disabled people ability of operating the rotary controls.

5. Other business

Document: SDWEE-07-02 (HUN)
SDWEE-06-03 (NL)

SDWEE-06-03:
As a reminder, input was requested to Industry concerning

- the questions raised by NL per document SDWEE-06-03 ("*May the folding seat for the crew always obstruct the access passage to the service door when there are more exits than the minimum required by paragraph 7.6.1.4*"), and
- the accessibility of the service doors

The answer of the informal group was that, according to the current wording of the regulation, it is allowed. The group also confirmed that this interpretation is conforming to the spirit of the regulation and that there is no need to amend the text.

SDWEE-07-02:
HUN presented the context of the accident which occurred in Egypt, with the understandable consequences in the Hungarian society. The expert explained his personal conclusions of the tragedy. He found this as a good opportunity for the group and GRSG to undertake the steps for improving the situation.
The Chair recalled the accident which occurred in Sweden and was discussed at GRSG, which generated also a discussion on toughened vs. laminated glass. He questioned whether the vehicle in stake in the Egyptian accident was complying with the requirements currently in force in Europe and at UNECE level (EVSC, age of the vehicle, etc). Concerning the debate about the

glazing material, the Chair recalled that the informal group decided not to be design restrictive and rather to let the manufacturer some freedom about the technology.
Concerning the vehicle itself, the chassis was probably bought to a European manufacturer, with some completion performed in Egypt. The HUN expert was keen not to blindly trust active safety systems, rather to continue improving the passive safety. He for example stated that the presence of safety belts would not have totally solved the situation in the case of this accident.

Conclusion: no passive safety feature would have alone avoided this tragedy. Only the EVSC would have avoided this.

It was also recalled that laminated glass is not forbidden in the current text of the regulation.

6. Further steps

Concerning the necessity for transitional provisions, it was agreed that their necessity would depend on the nature of the provisions. Transitional provisions would anyway be discussed for the other items as well.

It was proposed to hold an additional meeting for emergency lighting and transitional provisions, at FEBIAC : SDWEE-08 will be held on 25-26 January in Brussels focusing on emergency lighting, transitional provisions. The group was inclined to make the results of the work adopted as a whole package as a new series of amendments to the UN R107.

Note of the Secretariat:
It appeared subsequently that it would save travel costs and simplify travel arrangements to some experts of the group, if the 8th meeting of GRSG-SDWEE was held in Bonn on 24-25 January, rather than in Brussels on 25-26. It was then suggested by an email of 12 December 2011 to shift in space and time the 8th meeting to Bonn on 24-25 January 2011. Input was requested for the 16th of December 2011.

7. List of action items

- Secretary to check presence of all the documents on the UN website
- FEBIAC/VanHool to provide relevant information about 8th meeting in Brussels (subject to confirmation of the dates and place)
- All experts to internally check the relevant figures and draft requirements in the table of item 4 (p)
- NL to acknowledge the decision of the group about their question per document SDWEE-06-03
- All experts to prepare a position toward transitional provisions
- Paragraph 7.6.1.15.: Format to be improved by the Secretary for best clarity compared to the current text
- Paragraph 7.6.2.2.4.: adopted text to be introduced in the proposal
- Paragraph 7.6.2.7.: NL to raise comment if found appropriate
- Paragraph 7.19.1.1.2.: Industry to internally check the consequence of the number of self-illuminated signs.
- Justifications to be added and improved by the secretary, then revised by the informal group.
- Paragraph 7.8.3.: Emergency lighting: Industry to have a further revision of the text before making a final decision on the provisions for the emergency lighting.