

Minutes of 5th meeting of the Informal Group on Frontal Impact

Held at United Nations Economic Commission for Europe
Palais des Nations – Salle (room) 16 - Geneva
25th May 2009

1. Welcome

The chairman Pierre Castaing opened the meeting and welcomed the delegates.

2. Roll call

3. Adoption of the agenda

Doc. INF GR / FI-05-01

The agenda was adopted.

4. Adoption of the Minutes of last Meeting

Doc. INF GR / FI-04-06

Updates were submitted by VDA as they change positions of other members. The minutes were discussed, amended and adopted.

5. Actions from the Minutes of last Meeting

5.1. Document on German accident analysis (BASt)

Doc. INF GR / FI-05-02

Data years 2005-2007, two car accidents #:253000 and single car #:106000 accidents. Front-front represents less than 10% of car accidents but 50% of car fatalities. The severity rate was calculated identical to the French data. A similar correlation between severity rate and curb weight was found in the German data as in the French data.

Based on different assumptions how improvements could be made, a benefit study was made. One of the conclusions was that if nothing is done (meaning keep current barrier in Reg 94 and EuroNCAP), then there will be no extra safety gain also not for new models.

UK stated the study is useful as it gives for the first time a glimpse on the possible benefits. A similar study should be done in other countries to check if similar conclusions can be drawn as for Germany.

5.2. Document on French accident analysis (LAB)

Doc. INF GR / FI-05-03

An updated presentation taking into account the remarks of last meeting (see 5.2.1 to 5.2.3) was done.

The new calculated severity rate is 16% for partner and self protection (today this is 27%). This could result a reduction of fatalities of 40% in France in front impact collisions and 7% reduction for all impacts. In the basic data only front-front collisions were included. For Germany and India it remained unclear if the PDB proposal would solve the problem and improve the severity rating. Germany added that the proposal does not measure partner protection so it is difficult to estimate the effect

5.3. Compare the fatality rate with the current two categories (single car and car-car)

Doc. INF GR / FI-05-04

Swedish presentation on overview for selecting reference collisions: it provides information and proposals as a reference level. A 50% vehicle is around 1400 kg. 50% closing speed is 62 km/h and 85% is 107 km/h. Collision speed is independent from vehicle mass. The most common crash

is at 55 km/h and at 1500 kg and have energy of 128 kJ. The current minimum energy in R94 is around 70 kJ... The 50% is at 180 kJ and the 85% is 420 kJ. Need to establish a reference collision and to define a target for self protection. Other countries were requested to make a similar study to confirm the results of the Swedish study.

5.4. Thorax injury frequency :report similar data than previous presentations (All)

See Doc. INF GR / FI-03-06

No new input

5.5. Thorax injury frequency: update data from EU Project SARAC I&II (Germany)

Germany explained there is no update available as there is no data to work with.

5.6. Results on car-car tests and explain the higher passenger loadings and the barrier calculation. (Japan)

Doc. INF GR / FI-05-05

Document presented during the GRSP session (see point 7)

5.7. Position on the VDA presentation (All)

5.8. Amend Document FI_03-09 to focus on frontal impact (VDA)

No more action needed

5.9. Present the methodology for PDB introduction in the regulation. (France)

Doc. INF GR / FI-05-06

Possible benefits brought about by a passive safety improvement (PDB introduction) are: vehicles are designed with inhomogeneous front end force to meet current Reg 94 -> inhomogeneous front end force are responsible for different severity rates among fleet mass -> changing front end force versus mass will reduce and harmonise severity rates (harmonization of force levels leads to lower severity rates).

6. Open issues

- Swedish methodology presented (5.2.3 above): other countries to do similar exercise.
- Netherlands point of view: Up to now, you assume that possibility we would like to adapt the French regulation agree to align severity for all vehicle masses and do this by keeping the current test for heavier vehicles (> 1500 kg) and only a MDB test for light cars (< 1500 kg) which would raise the severity for light cars but not for heavier cars. France remarked that this would be a discussion without base data as this will be generated in the FIMCAR project over the next 3 years.
- Germany stated the vehicles do not need a design change with the implementation of the PDB and thus there is no improvement in occupant safety. A way forward to improve occupant safety should be achieved but without endangering the occupant safety in heavy cars.
- Japan does not believe the introduction of PDB will increase occupant safety. Japan would favour full width test introduction in addition of the offset test.
- Sweden wants to improve Reg 94 but need to assure that with PDB introduction the severity for small vehicles is indeed increased as this was shown not to be the case in the Japanese test.
- UK reserves judgement until they have seen a positive cost-benefit calculation and until they are convinced the changes will result in improvements of all cars. Outstanding questions need to be resolved as is planned in FIMCAR. UK prefers to await the outcome of FIMCAR before amending Reg 94.
- The EC agrees with UK that further research should be done.

- According to mass reduction and CO₂ emissions, France believes that it is difficult to design a vehicle that is infinitely stiff as claimed by Germany. No tests done so far have shown this is possible.
- Chairman: everyone agrees that there is a problem to be solved. The problem today is that the work of this group is going to produce something positive. And people want to be shown that things can work and so the position is that there are some very clear questions that have been raised. We are going to try before December to bring some of the answers to these questions. So what it is proposed that we come up with something more concrete between now and the end of the year and then we will propose these findings to the GRSP at that time.

7. A.O.B.

Documents Doc. INF GR / FI-05-05, Doc. INF GR / FI-05-07, Doc. INF GR / FI-05-08 have been presented during the GRSP session.

7.1. French presentation answering issues raised at last informal group meeting.

Doc. INF GR / FI-05-07

France believes that the PDB is also a good opportunity for harmonization because with the different car fleets across the world the current ODB (with its bottoming out and weak stiffness) is not the correct tool (it is the source of the incompatibility that exists today). The PDB guarantees a minimum EES. As example the EES changes from 43 (ODB) to 53 km/h (PDB) for the Smart and 50 to 51 km/h for the Silverado (large SUV). So the self protection of the light car is elevated (20%) and the self protection of the heavy vehicle is constant. The PDB test combines acceleration and intrusion: combination of higher test speed and higher obstacle stiffness lean to higher acceleration severity for occupants. A severity rate of 16% relates to a 7% improvement in fatalities and severe injuries of all accidents. The 'misuse' of the PDB was also studied (cars can be made so stiff they don't deform – VDA claim): front unit reinforcement leads to higher intrusion in the compartment. During the PDB development 300+ car-car accidents were analysed in detail and 120+ car-car tests performed of which 80 since 2003.

Russia wondered how compatibility can be improved: a more rigid barrier for a lighter vehicle or higher speed for a lighter vehicle. France agreed that a higher speed for a lighter vehicle is indeed good physics and a good proposal but politically not defensible (why test light car at lower speed than heavy car?), hence the need to work on barrier stiffness. Germany explained the French presentation is not a representation of the informal group but a presentation of the French proposal. Germany also noted that Bast has proven a misuse of the PDB is possible. UK shared the German comments. UK also stated that the informal group was meant to look at self protection and compatibility would be dealt with at a later stage. With the French presentation it looks as if we are dealing with compatibility or self protection that would lead the compatibility into a fixed direction. France replied that they clearly deal for self protection in compatibility: the self protection for a small car today is less severe than for a big car. The intention is not to include compatibility criteria, only want to create a similar level of severity for all cars (irrespective their mass).

7.2. Japanese presentation on their PDB test series

Doc. INF GR / FI-05-05

The objective was to examine the effects on light and heavy cars with the PDB introduction. Comparing tests results of the same mini car in four different configurations (64EDB, 56 ODB, 50 car-car, 60PDB), only the PDB deformed in a different way. Significant differences were seen in the deformation of the front rail between PDB versus ODB and car-car. The dummy injury criteria were very similar for the 60PDB and 64 ODB but all criteria were sufficiently met for all injuries. This means that inclusion of PDB is not expected to improve self protection.

7.3. NHTSA presentation

Doc. INF GR / FI-05-08

On joint US/France evaluation of advance compatibility frontal structures using the PDB. The Honda Odyssey was used for testing with and without the ACE. It seems that the PDB barrier is rather positive for the ACE design: same dummy injury levels and less intrusion with the PDB. Further evaluation is needed to address both the stiffness of the vehicle as well as the homogeneity of that stiffness, no parameter has been found that represents this correctly.

8. Next Meetings

September 15, 2009

OICA, 4 rue de Berry 75008 Paris

9. Actions

9.1. Propose solutions to solve the problem of car to car accident (All)

9.2. Do similar exercise than Doc. INF GR / FI-05-04 proposed by Sweden (All)

10. Attachments and Working Documents

Annex No.	Presented by / on behalf of	Title
1	PC	Attendance list
2	PC	Actions list
3	PC	Documents list

P CASTAING

Group Chairman

01 September 2009

Attendance List

FI-01-04

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Action Number	Action	Target Date	Action By	Comp Date
3.				
3.1.	Amend the minute of the first meeting	09/03/10	Secretary	09/03/10
3.2.	Amend the minute of the second meeting	09/03/10	Secretary	09/03/10
3.3.	Document on German accident analysis: for March meeting	09/03/10	Germany	postponed
3.4.	Document on French accident analysis: more detailed	09/03/10	France	09/03/10
3.5.	Injury mechanism (thorax injury)	09/03/10	Sweden	09/03/10
3.6.	Thorax Injury frequency	09/03/10	All	postponed
3.7.	Update of EU project SARAC I&II	09/03/10	Germany	postponed
3.8.	Input from VC-Compat	09/03/10	Sweden	postponed
3.9.	EES Calculation method =>Put the software on the PDB web site.	09/03/10	France	09/03/10
3.10.	PDB test result on heavy weight cars	09/03/10	Japan	09/03/10
3.11.	Update the Swedish document	09/03/10	Secretary	09/03/10
3.12.	VDA to present Document FI_03-09	09/03/10	VDA	09/03/10
3.13.	Input open questions, what is missing, next steps	09/03/10	All	open
4.				
4.1.	Document on German accident analysis: for May meeting	25/05/09	BASSt	25/05/09
4.2.	Document on French accident analysis: more detailed for May meeting	25/05/09	France	25/05/09
4.2.1.	Eliminate the older cars	25/05/09	France	25/05/09
4.2.2.	Check if there are 30 people also outside the car for the partner protection.	25/05/09	France	25/05/09
4.2.3.	Compare the fatality rate with the current two categories (single car and car-car)	25/05/09	France	25/05/09

Action Number	Action	Target Date	Action By	Comp Date
4.3.	Thorax injury frequency :report similar data than Doc FI_03-06	25/05/09	All	
4.4.	Thorax injury frequency: update data from EU Project SARAC I&II	25/05/09	Germany	
4.5.	Results on car-car tests and explain the higher passenger loadings and the barrier calculation.	25/05/09	Japan	
4.6.	UK, NI, Japan are asked to prepare a position on the VDA presentation	25/05/09	All	open
4.7.	Amend Document FI_03-09 to focus on frontal impact	25/05/09	VDA	
4.8.	Present the methodology for PDB introduction in the regulation.	25/05/09	France	25/05/09
5.				
5.1.	Propose solutions to solve the problem of car to car accident		All	
5.2.	Do similar exercise than Doc. INF GR / FI-05-04 proposed by Sweden		All	

Document Number	Title	Origin
6.1	Agenda of the 6 th Meeting of the informal group on frontal impact	Chairman
5.10	Draft minutes of the 5 th Meeting of the informal group on frontal impact	Chairman
5.9	dummies-position in Japanese tests	Japan
5.8	joint-researches-USA-France-presentation	France/USA
5.7	French-answer-to-R94amendement-issues	France
5.6	R94-METHODOLOGIE-BENEFITS-May-2009	France
5.5	PDB Research in JPN Mini-Cars & Minivan & PC	Japan
5.4	Swedish-Accident Data Review	VTI
5.3	French-accident-data-analysis	LAB
5.2	German-accident-data-analysis	BAST
5.1	Agenda of the 5 th Meeting of the informal group on frontal impact	Chairman
4.6	Final minutes of the 4 th Meeting of the informal group on frontal impact	Secretary
4.5	Contract with EC: Provision of information for the development of frontal impact legislation	TRL
4.4	Performance as Test Procedures of the PDB and ODB Tests for the Light and Heavy Cars	Japan
4.3	Injuries Reported in Frontal Impacts in Swedish Accident Data	VTI
4.2	Work progress regarding Self-Protection and Partner-Protection	LAB
4.1	Agenda of the 4 th Meeting of the informal group on frontal impact	Chairman
3.12	Draft minutes of the 3 rd Meeting of the informal group on frontal impact	Secretary
3.11	PDB research in Japan	Japan

3.10	Mobile Progressive Deformable Barrier and Mobile Rigid Barrier Tests	BASt
3.09	Detailed discussion of the VDA position on the proposal for draft amendments to UN-ECE R94	VDA
3.08	Influence of the PDB on the pulse	France
3.07	Additional research on PDB and MPDB	Netherlands
3.06	Evolution of mortality rate and fatal injury frequencies in Frontal impact since 1990.	France
3.05	APROSYS - Development of a Full Width Frontal Impact Test for Europe	UK
3.04	Single Vehicle Collisions - Extracts from the RISER project.	Sweden
3.03	Accident analysis - Work progress regarding Self-Protection V2	LAB
3.02	Evaluation of the Effect of the Implemented Full-Width Frontal Impact Standard on Reduction of Fatalities in Japan	Japan
3.01	Agenda of the 3 rd Meeting of the informal group on frontal impact	Chairman
2.09	Minutes of the 2 nd Meeting of the informal group on frontal impact	Chairman
2.08	VDA position on the proposal for the draft amendments to Regulation N°94	VDA
2.07	Japan research on Regulation N°94 amendments	Japan
2.06	Outstanding issues with PDB test	UK
2.05	Accident analysis - Work progress regarding Self-Protection V1	LAB
2.04	First finding of additional research	Netherlands
2.03	UNECE Reg. 94 – Past, Present & Future	Netherlands
2.02	Issue to be resolved in evaluation of Regulation N°94 amendments	Secretary/Sweden
2.01	Agenda of the 2 nd Meeting of the informal group on frontal impact	Chairman
1.04	Draft Minutes of the 1 st Meeting of the informal group on frontal impact	Secretary

Annex 3 –Documents list**INF GR /FI-05-10_draft**

1.03	Agenda of the 1 st Meeting of the informal group on frontal impact	Chairman
1.02	Proposal of rules of procedure and terms of reference	Chairman
1.01	ECE/TRANS/WP.29/GRSP/2007/17 – Proposal for draft amendments	France