Minutes of 7th meeting of the Informal Group on Frontal Impact

Held at Palais des Nations, Geneva
Room V
Geneva, Switzerland
07th December 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-07-01

The Agenda was adopted with two amendments. Mr. Thomson announced a Swedish presentation which was added as TOP 5.5. Mr. Damm announced a German presentation which was added as TOP 6.2.

4. Adoption of the Minutes of last Meeting

Doc. INF GR / FI-06-06

The minutes were discussed, amended and adopted.

5. Actions from the Minutes of last Meeting

Doc. INF GR / FI-07-02

5.1. Update of German accident analysis presentation (BASt)

Mr. Pastor gave a presentation to update and extend the German accident data analysis document. He showed figures from German national accident data of the years 2005 until 2008. He indicated that the first analysis had shown that the injury risk of serious and fatal injuries for car occupants in frontal car to car collisions did not depend in first place of the car they sit in, but on the car they hit. He showed that in frontal car to car collisions small cars have the highest share of fatalities. It was also shown that in frontal car to car collisions less than 10% of the fatalities happen in cars initially registered after 2003. He followed that a risk factor analysis restricted to new cars only will therefore be difficult.
He showed data on the mass ratio distribution in frontal car to car collisions. It was concluded that high mass ratios are a potential cause of serious and fatal accidents. However they do not constitute the highest share of fatal frontal car to car accidents.
Mr. Pastor gave an updated paired comparison analysis on the German accident data. It was shown that in a direct comparison female drivers are at a higher risk than male drivers, that older drivers are at a

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higher risk as compared to younger drivers and that newer cars are comparatively more save in a collision against an older car. It was shown that the fact that female are more vulnerable is not confounded by the fact that they also tend to drive smaller cars. The highest cost benefit relation is expected for an approach which can reduce the increased injury risk of females and which is expected to be aimed at an improvement of restraint systems.

For single car accidents it was shown that the injury risk for frontal car to car collisions is fairly independent of the cars weight.

5.2. Update of French accident analysis presentation (LAB)

Mr. Chauvel said that there is no update available for the French accident analysis at this stage.

5.3. TRL presentation on the first results of a frontal impact study

Doc. INF GR / FI-07-03

Mr. Richards from TRL gave a presentation on the first results of a frontal impact accident analysis study which is conducted by TRL by order of the European Commission. The study is based on national data from Great Britain, France and Germany.

The analysis showed that over the period since frontal impact legislation was enforced, road accident fatalities in the EU27 have reduced by approximately 30%. This is in particular true for car occupant fatalities which constitute ca. 50% of all road accident fatalities, at least for GB, Germany and France. The analysis also showed that the number of N1 fatalities is comparatively low with respect to M1 fatalities for all three countries considered. The proportion of single vehicle fatalities is on a similar high level (46%) for all three countries.

In the last part of the analysis a mortality and severity rate for car drivers in frontal car to car accidents was shown. Hereby a split was done with respect to the year of initial registration of both colliding cars. It came out that the conditional risk of being fatally injured provided being injured does not change - or does even increase - whether two cars of similar year of first registration collide. On the other hand a clear reduction of the conditional injury risk can be seen for the driver of newer cars colliding with older cars.

Comments & Discussion:

Mr. Zeitouni commented that he is missing German data in some parts of the common European data analysis. He asked if there is a connection to the German data analysis which has been shown. He asked if the increase in mortality rate when two modern cars collide is connected to the aggressiveness of new cars and if the mass ratio of the cars had been studied.

Mr. Richards replied that the German data can not completely identify all frontal impacts. Therefore parts of the analysis have only been possible with French and British data. There is currently no explanation for the constant mortality ratio in car to car collisions of similar age. A

review of mass ratio and possible confounding factors is planned for the second part of the study which is going to analyse In-Depth data.

Mr. Pastor replied to Mr. Zeitouni that there is a link between the German data analysis and the TRL study. Both studies have shown so far, that the risk of injury in frontal car to car accidents is more dependent on the car which somebody hits compared to the car somebody sits in.

Mr. Ammerlaan made a comment that is was desirable - if not necessary – to have an unconditional injury risk to get better confidence whether it is in deed the case that there is no improvement in accidents between two new cars as compared to accidents between two old cars. He commented that accidents between new cars where the driver of the new car did not receive any injuries are neglected by the mortality ratio approach. A possible solution could be to have a look at insurance data.

Mr. Damm asked if it was planned to include some exposure data like “vehicles registered” or “mileage data” in the analysis.

Mr. Edwards replied that this could be done for some countries whether people think that this is worthwhile.

Mr. O’Brien commented that the number of frontal collisions to LGVs is so low, especially w.r.t. the French data presented.

Mr. Chauvel returned that the tables reflect the contingencies of the national data.

Mr. Pastor asked why the number of car to car crashes is in general higher in the UK than in France and Germany.

Mr. Richards returned that some of the 3+ vehicles accidents which are given for French and Germany fall into the Car to Car category in the UK, where there is not given a 3+ vehicles category.

Mr. Delannoy expressed his disappointment about the study result that new cars did not improve.

Mr. Edwards returned that the results of this first step of the study must be taken with care. An In-Depth investigation of the hints given by the national analysis shall follow and give more insight details about reasons and correlations.

Mr. Castaing asked Mr. Broertjes about the position of the EU Commission on the TRL study results.

Mr. Broertjes returned that there are still a lot of open issues and things to do. He announced to supply any new results immediately to the group (meaning the Informal WG on R94).

Mr. Castaing said that for him as the chairperson of the group it is important that the analysis yet has shown that there is an existing problem in frontal impacts for car occupants. In detail problems with regard to gender of occupants or incompatibility between crash partners have been identified. It might furthermore be the case that the French approach to solve the problem is not the best one. However there is an open question to him and the group whether it is worth going on to amend R94 or if the group shall stop and go on later.

5.4. Not covered yet

5.5. Swedish presentation on “Review of open questions”

Doc. INF GR / FI-07-04

Mr. Thomson presented a study in order to summarise the status of the group's answers to a number of open questions, which have been raised by Sweden at the beginning of the Informal Groups work.

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With regard to the need of an updated accident analysis Mr. Thomson indicated that data presented by Germany, TRL and France showed an increased risk for occupants of small vehicles.

With regard to injury mechanism - and in particular with respect to an increased chest injury risk – it was concluded that no clear evidence has been laid down in the group. Therefore the focus on head and chest injury protection in the first place is still valid.

With regard to harmonisation potential it became obvious that Europe is the last region which does not have a frontal full width test in place. It was pointed out the adding a full width test to the current offset test would complete the picture and better reflect the range of frontal impacts that occur in real world.

With regard to fixing a relevant test severity it was pointed out that reference data for single vehicle collisions is still missing.

With regard to the demand that the PDB can guarantee a specific test severity the information given to the group showed that vehicles rupturing the PDB cladding have a lower EES than vehicles which did not rupture the cladding.

With regard to the PDBs ability to test the restraint system the tests presented to the group have shown, that not in all tests dummy readings have been significantly higher in PDB tests as compared to R94 tests.

It was concluded that there are contradicting facts regarding the PDB / R94 test severity for small cars. Higher decelerations are not necessarily reflected in dummy readings and there exists the problem of cladding rupture for the PDB, which decrease test severity. The current PDB proposal

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will therefore need additional requirements to be acceptable.

Comments & Discussion:

Mr. Edwards asked whether the message of increased risk for small cars is restricted to car to car crash scenarios.

Mr. Thomson replied that this is true and that there does not seem to be a mass dependent risk for single vehicle accidents.

Mr. Damm asked whether there are any particular countermeasures (vorstellbar) which are in particular effective for small cars and if different parameters for different cars sizes are considered.

Mr. Thomson replied that it would be best if there was no penetration to the barrier cladding. The application of different parameters wrt varying car sizes is however a matter of compatibility.

Mr. Castaing said that a minimum EES could be considered.

Mr. Slaba commented that the Japanese test did not show any benefit for small cars.

5.6. French presentation on criteria to avoid PDB misuse

Doc. INF GR / FI-07-05

Mr. Delannoy presented a document suggesting criteria to avoid any misuse of the PDB in a regulatory context as long as there is no supplementary full width test in place. The document proposed to introduce a criteria based on barrier deformation to control the energy absorbed in the vehicle and hence to avoid very stiff front end design.

Several comments have been made on the presented numerical limits of the criteria. It was agreed that a simultaneous implementation of a full width test would be easier and more useful.

5.7. German Presentation on ideas to change R94

Doc. INF GR / FI-07-06

Mr. Damm presented a document highlighting the needs which shall be considered when amending R94. Mr. Damm concluded that the current Full Width Test needs to be improved to be more efficient. In addition he explained that it is too early at this stage to discuss on stiffness

alignment of vehicles' front structures.

However, requirements on geometric alignment are necessary as basic requirement for improved compatibility and shall be implemented in two phases. With regard to evidence of higher injury risk for small occupants the use of a 5th percentile dummy was recommended. Besides technical issues it will be the duty of this group (IWG R94) to coordinate its schedule with the schedule of other activities (e.g. research projects) going on looking for answers to open questions. Therefore it is necessary to adjust the status and schedule of the group.

Comments & Discussion:

Mr. Castaing asked if it is necessary to wait for research with respect to implementing a 5th percentile dummy.

Mr. Damm answered that a pragmatic approach is required. A new dummy will not be a medium term issue, but the use of a different thorax might be an option. Decisions on the barrier usage have to be taken. With respect to geometric alignment research has been done and a requirement could be set up in due time. More details on the stepwise introduction (phase1 / phase 2) could be given at one of the next meetings of the IG FI group.
With respect to a question of Mr. Thomson Mr. Damm explained that the 50th and 5th percentile dummy shall be used in both tests, the full width and the offset test.

Mr. Castaing said that it will be necessary to have a checklist of all documents concerning the open issues (EEVC WG15, EU-Projects FIMCAR, VC-COMPAT, THORAX), to have a sound basis for the decisions which must be taken then.

Mr. Frost expressed that the German approach has the potential to go on, especially because it is not a one-step approach. It was in particular attractive and addresses some issues with regard to female and older people, which need to be addressed. It opens the opportunity for the group to flash in ideas. Mr. Frost indicated that the European Commission shall be involved to feed in results from EU-Projects THORAX and FIMCAR.

Mr. Davis made a comment on the harmonization potential of a full width approach.

Mr. Castaing asked how the group shall proceed:
A. Stop and wait.
B. Build program and start with first step.

Mr. Damm explained that this group is actually a great opportunity for common research. Although it is too early to propose something yet the group was quite effective in putting pressure on the time schedule.

Mr. Castaing concluded that at least Germany, France and Sweden have expressed their wish to work on improving safety in Frontal Impacts. During the next meeting a proposal on the schedule to go on shall be worked out.

5.8. A.O.B.

6. Next Meetings

4th of March 2010, Bonn German Ministry of Transport, room to be announced (9:00 – 17:00 full day)

Change of venue: meeting will take place at BASt in Bergisch Gladbach

27th of April 2010, Paris CCFA, room to be announced (9:30 – 17:30 full day)

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7. Actions

7.1. Japanese benefit analysis for a Full Width Test (...)
7.2. Extension of French Accident Analysis (LAB)
7.3. European Accident Analysis on behalf of the European Commission (TRL)
7.4. Input from Accident Analysis done for EU-Project Thorax (TRL/BASt)
7.5. Reference Collision Data based on Real World Accidents (BASt)
7.6. Time schedule (All)

8. Attachments and Working Documents

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

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	BASt	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
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	closed
4.5.	Results on car-car tests and explain the higher passenger loadings and the barrier calculation.	25/05/09	Japan	
4.6.	UK, Nl, 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	

Action Number	Action	Target Date	Action By	Comp Date
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	15/09/09	All	
5.2.	Do similar exercise than Doc. INF GR / FI-05-04 proposed by Sweden	15/09/09	All	
6.				
6.1.	Extension of German Accident Analysis		BASt	
6.2.	Extension of French Accident Analysis		LAB	
6.3.	European Accident Analysis		TRL	
6.4.	Input from Accident Analysis done for EU-Project Thorax		TRL/BASt	
6.5.	Reference Collision Data based on Real World Accidents		BASt	
6.6.	Review Doc. INF GR / FI-05-07 presented by France		ALL	

Document Number	Title	Origin
7.1	Agenda of the 7th Meeting of the informal group on frontal impact	Chairman
7.2	Presentation on updated German accident analysis	Germany
7.3	Presentation on the first results of a frontal impact study by order of the EU Commission	UK
7.4	Presentation to review open questions	Sweden
7.5	Presentation on possibilities to avoid misuse of the PDB	France
7.6	Presentation on ideas to amend R94	Germany
6.6	Draft Minutes of the 6th Meeting of the informal group on frontal impact	Secretary
6.5	Update work on reference collision	Sweden
6.4	Presentation on MPDB problems	France
6.3	Presentation on frontal impact issues	UK
6.2	Report on frontal impact issues	EU-Commission
6.1	Agenda of the 6th Meeting of the informal group on frontal impact	Chairman
5.10	Minutes of the 5th 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 5th Meeting of the informal group on frontal impact	Chairman
4.6	Final minutes of the 4th 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 4th Meeting of the informal group on frontal impact	Chairman
3.12	Draft minutes of the 3rd 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 3rd Meeting of the informal group on frontal impact	Chairman
2.09	Minutes of the 2nd 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	J apan
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 2nd Meeting of the informal group on frontal impact	Chairman
1.04	Draft Minutes of the 1st Meeting of the informal group on frontal impact	Secretary
1.03	Agenda of the 1st 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