

Minutes of 4th meeting of the Informal Group on Frontal Impact

Held at OICA Office
4, Rue de Berry – 75008 - Paris
10th March 2009

1. Welcome

The chairman Pierre Castaing opened the meeting and welcomed the delegates. The list of the participants can be found in the attachment.

2. Roll call

Attendees and Apologies for Absence: See Annex 1

3. Adoption of the agenda

Doc. INF GR / FI-04-01

The agenda was adopted.

4. Adoption of the Minutes of last Meeting

Some small corrections were agreed and the amended minutes were adopted.

Doc. INF GR / FI-03-12

5. Actions from the Minutes of last Meeting

5.1. Amendment of the minutes of the First Meeting

The amended minutes of the first meeting were adopted.

Doc. INF GR / FI-01-04-Rev1

5.2. Accident analysis

5.2.1. France: Presentation of French accident analysis status

Doc. INF GR / FI-04-02

The presentation differentiates between front impact = self protection and compatibility = self and partner protection. Accident sample based on 2005 to 2007 data: 47440 car occupants, front seats belted in front impact in 30124 accidents.

The presentation concluded that: heavier car has lower severity rate than lighter car. A graph was included showing for every car the partner protection versus the self protection: almost no cars perform good for both cases; no cars perform bad in both cases but many cars are either good for self protection but bad for partner protection and vice versa. The car models included have at least 30 people involved in the accident: France will check if the partner protection data also included 30 occupants in opponent vehicles.

Next meeting a more in depth presentation will be given.

On www.pdb-barrier.com all PDB related papers and the PDB software for PDB crash analysis can be found.

UK suggested to eliminate the older cars from the data set as the set itself is big enough. UK suggested only looking at cars from the year 2000 and younger in order to assure they meet the EU Directive on front impact that was introduced in 1998. France agreed to do this and will check if the result is different.

VDA remarked that Accidents between cars and (heavy) trucks are not included in the data set: only single car accidents and car-car accidents. This data should be included as this category resembles rigid wall impacts and could bring some new aspects.

Comment [OS1]: Clarification

Comment [OS2]: Clarification of the statement

France will check the data and compare the fatality rate with the current two categories (single car and car-car).

There is a high share of vehicles up to 800 kg whilst these are not common in Germany: VDA noted that passenger cars falling into the mass group of 800 kg represented in this study are not available in Germany and doubted that there are any such vehicles on sale in Europe, also the second mass group should be checked carefully for their relevance. France explained that French car manufacturers had some very light vehicles but they are older vehicles. It was argued that these vehicles should be excluded as the vehicle designs are very old, besides these vehicles are about to phase out of the fleet. BMW offered to provide a study of the minimum weights of vehicles on sale in Germany for all Manufacturers (see email from Mr. Thomas Slaba dated March 18th)... France said that if the sample only includes only cars from 2000 and younger as suggested by UK, these light cars will be largely excluded as well.

VDA also asked about what criteria are used to determine if someone was seriously injured. France replied that every occupant that is hospitalized for more than 24 hours is considered seriously injured. VDA then asked what happens to people that are hospitalized for observation only, which is a quite common procedure in Germany. Even if most of these people are released without the need for further treatment they would show up as seriously injured victims in the French statistics. France agreed that the definition of injuries in the official statistics is not more precise.

UK asked how the work presented will link to the calculation of the PDB benefit. France explained the PDB goal is to harmonise the test severity for all cars. The study aims to show that the current cars are very stiff because of the current Regulation.

Germany stated the data show the severity rating is independent of the vehicle mass. How will the PDB affect this? Bast also wondered why the % of single vehicle accidents is so low (#~10% taking into account only accidents with at least injuries are recorded) whilst everyone knows that single car accidents represent 50% of fatalities (see FI-03-09 page 8 but this shows only fatalities). France stated that also in their data the severity rate is higher in car-to-car accidents for small cars than for heavier cars. PSA stated that in 2005: 1380 fatalities in front impact of which 650 car-car and 370 car to obstacle. UK suggested the VDA data includes all impacts not only front impacts and hence it could be biased. However the results of the frontal collisions in the Swedish study – see point 5.2.3 – indicated an even higher share of single vehicle accidents than the German data.

5.2.2. Germany: German accident analysis

Bast apologised because their analysis cannot be presented yet as it is not in the final stage. First indications show there is no mass effect for single vehicle accidents, the mass effect is dominant for car-car accidents and by looking at EuroNCAP tests the concluded only increasing self protection will have an insufficient effect as the compatibility problem will remain.

5.2.3. Sweden: data about injury mechanism

Doc. INF GR / FI-04-03

The purpose of the analysis is to check the injury patterns especially in newer vehicles. The results cannot be applied in activities of this group because there is no information on impact severity and limited information for newer vehicles. For self protection the Swedish data is not suitable. Extra information: out of 3000 front impacts over a period of 5 years, 2000 where single vehicle accidents. This shows a similar trend than German data.

- 5.2.4. All: Thorax injury frequency
No more information available.

5.3. Test Results

- 5.3.1. Japan: "Performance as Test Procedures of the PDB and ODB Tests for the Light and Heavy Cars

Doc. INF GR / FI-04-04

The purpose was to examine effects on mini-cars when the test conditions prescribed in ECE R94 are replaced by PDB test. The EES in 60PDB was around the same level for Mini-Cars and Minivan. The EES in 64ODB was higher for Minivan than Mini-Cars. However, when the EEVC Barrier deformation energy was actually measured, the EES difference between Minivan and Mini-Cars was not as large as when it was calculated using the constant value of 45 kJ.

A car-car (Mini-Car B to Light Passenger Car) test has been performed and results with final conclusions will be presented next meeting. The deformation of the car is different for the two barriers but in Japan there is a full width impact as well. Main conclusion will probably be there is no need to change the barrier to PDB. PSA stated the conclusions confirm their experience and this is particularly satisfying as it is the first time data for right hand drive is shown. VDA remarked that based on the results of the study the Japanese vehicles designed using the current ECE-R94 would not have to be changed to pass the PDB-Test. Therefore it is unclear how the implementation of the PDB should drive the vehicle development. PSA stated that for the minicar A and B the leg injuries are increased from the ODB to the PDB which would mean that footwell intrusion would need to be improved if the PDB barrier would be introduced if the same safety wants to be assured (even though the legal limits are not exceeded). France concluded that the self protection is not lowered if the PDB would be introduced as almost all dummy injuries are slightly higher in the PDB test.

After discussion between PSA and VDA the final PSA conclusion was: Germany agrees that if Reg 94 is changed to PDB then no change to car design is needed. Netherlands concluded that only looking at self protection the car design will not be changed as demonstrated in this presentation hence the need to include a compatibility assessment which will result in car design changes. France argued that legislation will apply to all vehicles so there will be vehicles that will need design changes. Netherlands agreed but stated that these couple of vehicles that will be changed will not result in a big shift in safety on the road.

France asked if real world data is available for the cars used in the research. Japan stated they don't have.

Sweden remarked that the research shows there is no large increase on the load on small cars with the PDB and this was the idea. In VC-Compat smaller vehicles had 50-52 km/h EES with the PDB and that would drop for heavier vehicles. In the Japanese data the EES for the minicar is only 48 km/h.

Comment [OS3]: It is proposed to remove the comment regarding the "first time data for right hand drive" since France performed a series of tests with RHD vehicles in 2004. See Slide No. 32 in the VDA Presentation.

6. Open issues

6.1. VDA presentation

- 6.1.1. VDA discussion of the proposed amendments to R-94" doc FI_03-09

Doc. INF GR / FI-03-09

Accident data shows that compatibility has improved when comparing accident data pre 1996 to accident data past 2001. Car-car related injuries/fatalities are the smallest group of the total fatalities (1. Single vehicle crashes; 2. Car-commercial vehicles; 3.

Comment [OS4]: This paragraph is not clear. Do these energy values refer to the energy dissipated in the barrier or the energy dissipated in the vehicle? Also, is VTI = Sweden? It would be useful to make this clear for the official records.

Car-car). Regulation 94 assures a stable and stiff compartment with good self protection as energy is well dissipated during the crash. The current Regulation 94 is almost a worldwide harmonisation! Changing to the PDB would go away from this harmonisation.

With simulation (Golf, E-Class, Smart) it was shown that a stiff car performs better with the PDB but performs much worse with the current Regulation 94 and also with a stiff object. In the Golf simulations it was shown that the compartment deceleration pulse would be the same in a PDB-Test, even if the longitudinals were rigid.

With another simulation it was shown that a vehicle with a larger engine (and hence less deformation zone) is detected by the current R94 but would not be detected by the PDB-Test.

The results of a French testing program with the PDB and R94 were shown. VDA argued that the introduction of the PDB-Test would not necessitate any changes in the design of current vehicles and therefore argued that there could be no benefit for the change to the regulation.

The VDA ask France to clarify how vehicles could and should be designed if the PDB is introduced, e.g. using force-deformation diagrams for vehicles with different masses.

VDA also ask France to show the differences to the current situation and the benefit that would be seen in the accident statistics.

France remarked that the calculation on page 18 shows that the Reg 94 is mass dependent. On page 19, the stiffness is increased and this is opposite to what car manufacturers want (according to PSA they want lighter cars, not stiffer cars). It was stated that Page 24 and 25 show that there is always a need for a full width test as otherwise the too stiff designs cannot be detected by the PDB or the ODB. VDA replied that the ODB is able to detect excessively stiff structures by itself. It was stated that On page 26 it was not checked if with the current restraint systems the stiffness can be decreased with the same result of self protection for the dummy.

Comment [OS5]: The origin of this statement needs to be clarified, since not all manufacturers agree.

6.1.2. Input open questions

UK, NI, Japan are asked to prepare a position on the VDA presentation. France will prepare an answer to the VDA presentation and positions of other authorities.

VDA raised the question about the targets of the group, especially with regard to the issue if the greatest overall societal benefit should be achieved or if just a single event (recent SUV against small car crash test) should be addressed.

6.1.3. Next steps

French accident data need to be finalised and open questions need to be answered (2000 models and younger only, car-truck accidents ...)

Japan results on car-car tests.

Japan will explain the higher passenger loadings and the barrier calculation.

France will present the methodology for PDB introduction in the regulation.

6.1.4. US test availability

US tests are available on this website:

<http://www-nrd.nhtsa.dot.gov/database.aspx/vehdb/querytesttable.aspx>.

Fill in the test number to reach report, pictures and videos.

PDB test: 6296, 6299, 6298, 6340, 6368, 6369, 6370

R94 test: 5654, 5666, 5717, 5879, 5880, 6295, 6297, 6321, 6194, 5878, 5973, 5974, 6195

7. A.O.B.

- 7.1. TRL presentation about study for the EC, 'To provide information for the development of frontal impact legislation'

Doc. INF GR / FI-04-05

TRL announced they received a contract from the EC on gathering information and evaluating it on the development of the frontal impact legislation. No additional work/studies will be done. A report will be sent to the EC by the end of April.

8. Next Meetings

- 25th of May before GRSP, Palais des Nations, Geneva
- 15th of September, OICA, 4 rue de Berry 75008 Paris

9. Actions

- 9.1. Document on German accident analysis: for May meeting
- 9.2. Document on French accident analysis: more detailed for May meeting
 - 9.2.1. Eliminate the older cars
 - 9.2.2. Check if there are 30 people also outside the car for the partner protection.
 - 9.2.3. Compare the fatality rate with the current two categories (single car and car-car)
- 9.3. Thorax injury frequency => All: report similar data than Doc FI_03-06
- 9.4. Thorax injury frequency => Germany to update data from EU Project SARAC I&II
- 9.5. Japan results on car-car tests and explain the higher passenger loadings and the barrier calculation.
- 9.6. UK, NL, Japan are asked to prepare a position on the VDA presentation
- 9.7.
- 9.8. France will present the methodology for PDB introduction in the regulation.

Comment [OS6]: This would only be relevant for Page 13 of the presentation but is impossible to do because the accident databases we used for the data on Page 13 do not accurately define frontal collisions. The rest of the document is focused on frontal impact.

10. Attachments and Working Documents




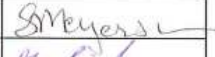


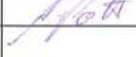
Annex No.	Presented by / on behalf of	Title
1	PC	Attendance list
2	PC	Actions list
3	PC	Documents list






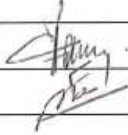



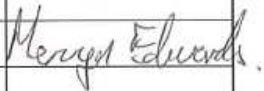
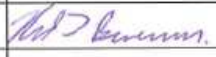
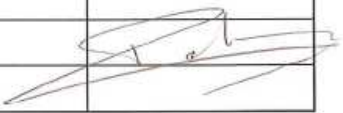
P CASTAING & E FAERBER
Group Chairman & Secretary
24 April 2009


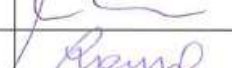
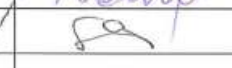

GRSP_INF_FI

LIST OF PARTICIPANTS

4th MEETING - OICA - 2009/03/10

	A	B	C	D
1	NAME	COMPANY	email	Signature
2	Mr. Claus PASTOR	BAST	pastor@bast.de	
3	Mr. Bernd LORENZ	BAST	lorenz@bast.de	—
4	Mr. Louis Sylvain AYRAL	CLEPA	techsec@clepa.be	
5	Mr. Dan DAVIS	CN	davisda@tc.gc.ca	
6	Mr. Richard DAMM	DE	richard.damm@bmvs.bund.de	—
7	Mr. Paul DOYLE	EC	paul.doyle@ec.europa.eu	
8	Mr. Dominique CESARI	EEVC	cesari@inrets.fr	
9	Mr. Robert THOMSON	EEVC WG15	robert.thomson@vli.se	
10	Mr. José Luis GARCIA GARCIA	ES	jlgarcia@mityc.es	
11	Mrs. Ines LEVALLOIS	FAURECIA	ilevallois@brieres.faurecia.com	
12	Mr. Franck VAN WEST	FIA	fvanwest@fiamobility.com	
13	Mr. Roland SCHAER	FORD	rschae17@ford.com	
14	Mr. James ABRAHAM	FORD	jabrah11@ford.com	
15	Mr. Yannick SOUCHET	FR	yannick.souchet@developpement-durable.gouv.fr	
16	Mrs. Susan MEYERSON	GRSP	susan.meyerson@dot.gov	
17	Mr. Hideki KOGA	HONDA	Hideki_Koga@n.t.rd.honda.co.jp	
18	Mr. Kris VAN DER PLAS	HONDA	Kris.Van.der.Plas@honda-eu.com	
19	Mr. Ansgar POTT	HYUNDAI	apott@hyundai-europe.com	
20	Mr. Sergi FERRIS	IDIADA	sferris@idiada.com	
21	Mr. Vinayak GOGATE	IN	vsg01303@incat.com	
22	Mr. Abhay MANNIKAR	IN	mannikar.pst@aralindia.com	
23	Mr. Pedro BUENO CARRO	INTA	buenocp@inta.es	
24	Mr. François ABRAM	ISO	abram@iso.org	
25	Mr. Antonio ERARIO	IT	antonio.erario@infrastrutturtrasporti.it	
26	Mr. Takehisa YAMAKAWA	JAMA	tcs@jama-e.be	
27	Mr. Yoshihisa TSUBURAI	JASIC	tsuburai@jasic.org	
28	Mr. Hidenobu KUBOTA	JASIC	kubota@jasic.org	
29	Mr. Hitoshi KANOSHIMA	JP	kanoshima-h2ct@milit.go.jp	
30	Mr. Jae MOON LIM	KATRI	moonjm@chol.com	
31	Mr. Si WOO KIM	KATRI	wawoo@kotsa.or.kr	

	A	B	C	D
32	Mr. Cyril CHAUVEL	LAB	cyril.chauvel@lab-france.com	
33	Mr. Hans AMMERLAAN	NL	hammerlaan@rdw.nl	
34	Mr. Asbjorn HAGERUPSEN	NO	asbjorn.hagerupsen@vegvesen.no	
35	Mr. Hideki YONESAWA	NTSEL	yonezawa@ntsel.go.jp	
36	Mr. Yves VAN DER STRAATEN	OICA	oica@oica.net	
37	Mr. Jens SCHENKENBERGER	OPEL	jens.schenkenberger@de.opel.com	
38	Mr. Thomas KINSKY	OPEL	thomas.kinsky@de.opel.com	
39	Mr. Tadeusz DIUPERO	PL	blb@pimot.org.pl	
40	Mr. Richard ZEITOUNI	PSA	richard.zeitouni@mpsa.com	
41	Mr. Harold VALLEE	PSA	harold.vallee@mpsa.com	
42	Mr. Patrice CHANROND	PSA	patrice.chanrond@mpsa.com	
43	Mr. Jacques FAURE	RSA	jacques.faure@renault.com	
44	Mr. Bernard FAVROT	RSA	bernard.favrot@renault.com	
45	Mr. Vladimir SALNIKOV	RU	odhch@dd.vaz.ru	
46	Mr. Göran ERIKSSON	SE	goran.eriksson@vv.se	
47	Mr. Eberhard FAERBER	Secretary	eberhard.ferber@arcor.de	
48	Mr. Peter DAVIS	SMMT	pdavis@smmt.co.uk	
49	Mr. Pascal DELANNOY	TEUCHOS	pascal.delannoy@utac.com	
50	Mr. Richard SCHRAM	TNO	richard.schram@tno.nl	
51	Mr. Shuji YAMADA	TOYOTA	shuji@yamada.tec.toyota.co.jp	
52	Mr. Mervyn EDWARDS	TRL	medwards@trl.co.uk	
53	Mr. Rudolf GERLACH	TUV	rudolf.gerlach@de.tuv.com	
54	Mr. Vladimir SATOCHIN	TUV SUD	vladimir.satochin@tuv-sud.cz	
55	Mr. Jan HNILICA	TUV SUD CZ	jan.hnilica@tuv-sud.cz	
56	Mr. Neil BOWERMAN	UK	neil.bowerman@dft.gsi.gov.uk	
57	Mr. Bernie FROST	UK	bernie.frost@dft.gsi.gov.uk	
58	Mr. Edoardo GIANOTTI	UNECE	Edoardo.Gianotti@unece.org	
59	Mrs. Mary VERSAILLES	US	mary.versailles@dot.gov	
60	Mrs. Tiphaine MARTIN	UTAC	tiphaine.martin@utac.com	
61	Mr. Pierre CASTAING	UTAC	pierre.castaing@utac.com	
62	Mrs. Dominique VOUILLOZ	UTAC	vouilloz@utac.com	

	A	B	C	D
63	Mr. Gennadij MINEEV	VAZ	mig@vaz.ru	
64	Mr. Tortsen LEIDIGER	VDA	leidiger@vda.de	
65	Mr. Sean O'BRIEN	VW	sean.obrien@volkswagen.de	
66	Mr Martin HEON	0	0	
67	MR MAX LANG	0	0	
68	Mr. Thomas Slaba	0	0	
69	0	0	0	
70	0	0	0	
71	0	0	0	
72	0	0	0	
73	0	0	0	
74	0	0	0	
75	0	0	0	
76	0	0	0	
77	0	0	0	
78	0	0	0	

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	
4.2.	Document on French accident analysis: more detailed for May meeting	25/05/09	France	
4.2.1.	Eliminate the older cars	25/05/09	France	
4.2.2.	Check if there are 30 people also outside the car for the partner protection.	25/05/09	France	
4.2.3.	Compare the fatality rate with the current two categories (single car and car-car)	25/05/09	France	
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	

Action Number	Action	Target Date	Action By	Comp Date
4.6.	UK, NI, Japan are asked to prepare a position on the VDA presentation	25/05/09	All	
4.7.		25/05/09	VDA	
4.8.	Present the methodology for PDB introduction in the regulation.	25/05/09	France	

Comment [057]: See comment above.

Document Number	Title	Origin
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

Annex 3 – Documents list

INF GR / FI-04-06_final

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
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