

Minutes of 5th meeting of the Informal Group on Child Restraint System

Held at Federal Ministry for Transport, Innovation and Technology - Vienna
2nd September 2008

1 Welcome and Introductions

Pierre Castaing opened the meeting; Mr Jahn welcomed the delegates and presented the meeting arrangements.

2 Roll call

See participant list.

Attendees and Apologies for Absence: See Annex 1

3 Approval of Agenda

Doc. INF GR / CRS-5-1_Final

The draft agenda was adopted with the addition of a Japanese presentation.

4 Approval of the Minutes of last meeting

The Minutes were adopted with following changes:

Doc. INF GR / CRS-4-9_Final

- Page 4 Daimler did *not* promise to perform tests with the P10 (with and without booster). Also the background for this request was unclear. Consumers clarified that the discussion at the time revolved around P10 and P12. Britax added the question was what is the largest dummy used. Daimler then replied that submarining is looked at with the different dummy sizes. Daimler confirmed but said it makes no sense without a CRS as indicated in the minutes. The minutes were amended to read: *'Mister Horn mentioned that sled tests are conducted with different dummy sizes, including the P10 with or without booster. Submarining is one of the key issues that are considered. He proposed to present some results from tests with P10, with and without CRS during next meeting.'*
- TRL stated that in §6.4.1. the action was for IDIADA as they did the work and not for TRL. This was corrected.
- FTSS proposed to amend: *'Mister Waagmeester offered presented to the group an overview of..., tests were performed with old version of Qs-series family and...'*

5 Actions from the Minutes of last meeting

The action list was reviewed. Presentations and discussions followed each item.

5.1 Test bench

5.1.1 ECE.R44 and NPACS benches comparison by TRL or DFT (expected)

Doc. INF GR / CRS-5-3

TRL presented the NPACS work on benches: geometric and stiffness properties were measured in 30 vehicles (best sellers and some vehicles selected because of known problems in EuroNCAP tests). The NPACS bench cushion characteristic is much stiffer than the current bench. The NPACS bench dimensions and seat back angle are different to the current bench as well. There are 2 seats: one for belted systems and one for ISOFIX. All details will be made available in the presentation. All anchorages and the floor pan are identical to those of the current Regulation 44 bench.

CLEPA asked if a carry cot can be tested on the NPACS test bench. TRL replied it may not be wide enough.

The chairman asked if the NPACS bench can be used as basis for the future regulation.

TRL replied that the specification of the foam needs to be clarified in order to avoid it can be sourced only at one manufacturer.

CLEPA said that in order to have good repeatability, also the bench itself needs to be rigid (min deflection). The chair agreed and explained specifications already exist.

CI felt it necessary to discuss the anchorage location and floor pan before a proposal is drafted. CLEPA wants to have a defined floor pan from the manufacturers. The chairman said there is no other proposal than the current Regulation 44 text, so unless a new proposal is made we have to use what exists. TRL asked if car manufacturers could provide an envelope of where a possible third point could be in order to have it as representative as possible in the vehicle. VW replied that a proposal from CLEPA exists and that it is being checked but it takes time. Daimler stated a third point is not necessary as this will in fact be a new ISOFIX system. Introducing another 'third' point goes against harmonisation, in fact it is a 'fourth' point. US confirmed that the addition of a 'fourth' point would not be harmonisation as the US is looking at a 3 point system. Nederland explained that the current Regulation 44 is restrictive in labelling 'universal' CRS as it needs a top tether. In order to extend the definition of universal CRS, the proposal was made to include the 'third' (fourth) point. A second reason was the fear of misuse with the top tether. The chair concluded that there is no data on the 'fourth' point; this group is not a research group to investigate this further. If this proposal of a 'third' point needs to be further pursued, then it is up to EEVC or ISO to study it.

The chairman concluded that a small group (led by TRL? – they will check if they can) will draft a proposal by next meeting. The NPACS bench will be used as basis for the future regulatory test but whilst trying to combine the 2 benches (one for belted CRS and one for ISOFIX) into one with the necessary clarification of the foam specification.

Action TRL

5.2 Classification – Load level in Isofix anchorages

5.2.1 CLEPA presentation (expected)

Doc. INF GR / CRS-5-4

CLEPA presentation on load level: ISOFIX lower anchorages sensor (load calculated in the centre of the 6 mm diameter anchorage, ISOFIX anchorages in most rearward position), top tether load sensor. Pulse was 33,5 g (NCAP type). The tests were performed with and without top tether. The load levels in the ISOFIX anchorages were: 2990 N (R44 P3), 2878 N (lower anchorages) and 5400 N for top tether (NCAP P6 top tether) and 5198 N (NCAP

P6 no top tether). More tests in other albs are planned. Input from car manufacturers is expected to evaluate anchorage deformation.

NHTSA explained they are interested in the results but have not performed any tests yet. (Note US uses latch system whilst CLEPA used the EU rigid anchorages.)

The chair stated that in this one 'misuse' test (NCAP pulse without top tether), results in total of 10 kN whilst the regulation specifies 8 kN in a static test setup. The chairman concluded that more data is needed.

Action CLEPA

5.2.2 OICA presentation (expected)

No presentation available. Daimler explained that in US they are also investigating how the weight groups could be increased (weighted 6 years old) without compromising the load levels (Latch system and top tether). Computer simulation showed that if the weight is increased, there is no safety margin left which is normally 20%. The calculations now have to be validated by sled tests. Then it needs to be investigated how the results can be compared with the EU static test. US anchorages are designed to meet an 11 kN requirement.

The chairman concluded more data is needed but given the explanation of the US work, it looks difficult to increase the mass. The alternative could be to increase the load level of the anchorages. The chairman asked if OICA could give an indication to the group what the mass is they can meet: g-level and weight of child. VW replied that the current limit would be the 18 kg child weight plus the 15 kg CRS weight as defined today. The weighted 6 years old dummy is at the limit of the US design. The chairman said the total weight is important but maybe a 6 years old dummy (22 kg) with a light CRS would be possible.

VW mentioned that the total weight is indeed most important as long as the centre of gravity does not change too much.

The chairman said the total weight (combination child and CRS) is important. The total weight limit and the g-level could be interesting to define the max load level.

CLEPA (in cooperation with OICA) will draft a proposal for the limits.

Action OICA + CLEPA

5.2.3 Other issues concerning classification

Nederland promised to provide a table with anthropomorphic data.

Action NL

5.3 Dummies

5.3.1 Q Dummies synthesis document by FTSS

FTSS explained that all changes applied to the dummy up to today were listed in a matrix (140 changes). Instead of making it available in a presentation, a workshop is proposed to explain the changes and the reasons. Many of the changes resulted from the CREST project. CLEPA replied that this list of changes is absolutely necessary. A workshop may not be necessary at this stage. VW added that if FTSS wants the dummy is used they have to freeze the design. FTSS replied that no changes were made since 2004 except for structural

changes that did not change the performance. All Q dummies since 2004 should produce the same results. Dummies before 2004 have received an update kit to align them with the latest standard.

FTSS will provide a document with all changes made since 2004, including the parts numbers of the 2004 specification. A workshop may be organised after the next meeting, if needed.

Action FTSS

5.3.2 USA update of the status of the Q3 side impact dummy (expected)

NHTSA reported that the status was presented at last GRSP. Since then, the omni directional neck was in collaboration with FTSS incorporated in the Qs dummy. Also the thorax has been redesigned. The pelvis and upper femur are also changed. NHTSA believes the Qs with the omni directional neck will be a very biofidelic dummy. A next update will be presented at next GRSP.

5.4 Dynamic tests

5.4.1 NPACS study on rear impact by IDIADA

IDIADA is not attending the meeting, no further information.

This presentation is postponed next meeting (October).

Action IDIADA

5.4.2 UTAC presentation on pulses

No information, as they struggle to get some free time on the sled.

This presentation is postponed next meeting (October).

Action UTAC + Partners to lend second Q3

5.5 Interoperability with vehicles

5.5.1 APROSYS presentation by UPM

Doc. INF GR / CRS-5-2

Mr Martinez (INSIA) presented the evaluation of the side impact test procedure proposed by IHRA/SIWG and part of the APROSYS project (CRS-5-2). Part of the study was an evaluation of the risk of deploying side airbags. The objective for side out of position was to review the appropriateness of the IHRA proposal for Europe. Different positions were reviewed (ISO 14933) and tested with 3 years old (HIII), 6 years old (HIII) and 5% female (SID-IIs). The evaluation looked at front and rearward facing, curtain and seat mounted airbags and included repeatability and reproducibility of the tests. IDIADA and TNO performed the tests; the car sued was a Toyota Corolla. One Römer CRS (rated good by ADAC) and one supermarket booster seat (rated poor by ADAC) were used. All injury parameters were well below the limits (max value was 35% of injury limit) for the HIII3yo and HIII6yo. The conclusions reached were: no serious airbag interaction (loading < 15%) between airbag and child in CRS; most injury values lower than "standard" IHRA scenarios;

neck tension force higher with CRS but still very low (< 10%); OOP in case of use of group I CRS not an issue, results with booster comparable with “standard” IHRA; no significant difference between “good” and “poor” CRS. The main findings are: reproducibility is very difficult, repeatability is possible; the proposal covers the worst case situation; Accident studies show OOP is not (yet?) an issue in Europe.

FTSS asked if the results would be different if a pulse would be applied in addition to the airbag deployment. Mr Martinez replied the difference would be small, only some more movement of the dummy. The configurations used already represent the worst case, i.e. generate the max possible load from the airbag on the dummy.

Britax added that the results are valid based on current state of the art which is based on the current side impact tests. What if the side impact test changes (new barrier ...), maybe the situation will change. Mr Martinez considered that the current results are max 30-35% of the injury limits; even a new side impact procedure will not dramatically worsen the situation.

The group concludes that there is no concern about the interaction CRS/children with airbags. OOP is no problem / no issue (in EU) and will not be taken into account in the work of this group.

5.6 Japanese recommendations

Doc. INF GR / CRS-5-5

Japanese presentation regarding the amendment of the CRS Regulation at ECE / GRSP's CRS informal group

JASIC explained that the purpose of the group is still not clear. The chairman explained the mandate given by GRSP was to draft a new Regulation whilst keeping the current Regulation 44. In addition, a lot of data was generated by EEVC that can be taken into account in the new draft Regulation. Justification is included in the EEVC reports and this justification will need to be explained to GRSP. In the informal group the task is to come to the best possible compromise. The Netherlands confirmed the chairman's explanation and referred to the accident studies included in the EEVC report. The chairman explained that the meetings so far were used to collect all information, the next step will be to start drafting text and in that text all necessary documents will be referenced in order to provide all necessary background and justification.

6 Definition of a Frame Work for drafting a regulation (Chairman)

- Nederland promised to provide a Working Document Matrix: Issue / Subject.
- Need to define clearer the mandate of the ISO group concerning the methodology of lateral impact: assure that any integral ISOFIX CRS should contain the child during lateral impact with the necessary energy absorption. Britax added that the group has to specify ISO should supply a test method with suitable dummies and injury criteria within the timeframe of this group (end 2009). Daimler asked if it is not the job of this group to decide which method is the best and not ask ISO or anyone else because they will obviously propose their own method. The chairman said this could be done in parallel, however we have to check if ISO can help us or not. NHTSA added they are doing their own research mainly looking at the dummy. However, they feel that also the car structure should cooperate in the protection (energy absorption ...). NHTSA plans to finalise their work in 2008.
- EEVC WG18: universal rearward facing ISOFIX: WG18 work to include an analysis on the need for a 'fourth' point. Mr Martinez explained the new mandate for WG18 is

being drafted and this request can be included. Sweden explained they use support legs since many years and supports a technical solution.

7 Date and Venue of Next Meetings

Dates of next meetings were planned:

- October, 7th – ACEA (Brussels) (CLEPA room too small for the group)
- November, 25th – BNA (Suresnes)
- January, 21st – BAST (Köln)

8 AOB

Czech Republic explained a proposal to clarify Regulation 44 Annex 17. This issue must be discussed at GRSP level.

9 Actions

To conclude the 5th meeting, Pierre Castaing mentions that priority will be given during next meeting to:

- Main focus on lateral impact
- Rear impact: CI explained that NPACS has done work and the conclusion was it is necessary to take it on board. A presentation from IDIADA is awaited and no decision should be taken before information has been made available. Netherlands explained that in the EEVC report there is not much data on it (i.e.: no problem).
- Load level: CLEPA (in cooperation with OICA) to draft a proposal for the limits.
- Classification: CLEPA will draft a proposal laying out the basic principles of a new classification (based on height and weight).
- Pulse: UTAC will draft a first proposal.
- Test bench: A small group (led by TRL? – they will check if they can) will draft a proposal by next meeting.

See Action list in Annex 2.

10 Attachments and Working Documents

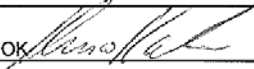
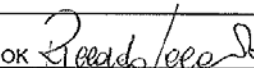
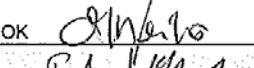
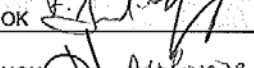

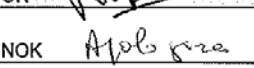
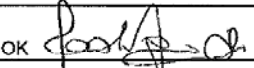
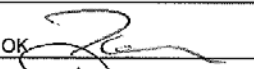

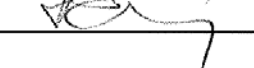

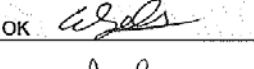

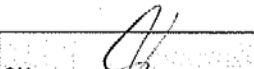
Annex No.	Presented by / on behalf of	Title
1	PC	Attendance list
2	PC	Actions list
3	PC	Documents list

P CASTAING
Group Chairman
22 September 2008

GRSP_INF_CRS

LIST OF PARTICIPANTS

5th MEETING - BMVIT - 2008/09/02

NAME	COMPANY	email	Signature
Ms. Eva-Maria EICHINGER	AT	eva-maria.eichinger@bmvit.gv.at	NOK Apologize
Mr. Thomas BELCHER	AU	Thomas.Belcher@infrastructure.gov.au	Apologize
Mrs. Yolande FOURNIER	AUTOLIV	yolande.fournier@autoliv.com	
Mr. Alf HOLGERS	AUTOLIV	alf.holgers@autoliv.com	
Mrs. Britta SCHNOTTALE	BAST	schnottale@bast.de	OK 
Mr. Pierre DE LANGHE	BE	pierre.delanghe@vici.fgov.be	
Mr. Riccardo SACCHETTO	BELLELI	rsacchetto@bellelli.com	OK 
Mrs. Michèle MAITRE	BNA	michele.maitre@bn-auto.com	OK 
Mr. Farid BENDJELLAL	BRITAX	Farid.Bendjellal@britax-childcare.com	OK 
Mr. Eric BERGEVIN	CA	bergeve@tc.gc.ca	NOK 
Mr. Ronald VROMAN	CI	rvroman@consumentenbond.nl	OK 
Mr. Louis Sylvain AYRAL	CLEPA	techsec@clepa.be	NOK Apologize
Mr. Wei WU	CN	wuwei@catarc.ac.cn	
Mr. Paolo FUMAGALI	CSI	PaoloFumagalli@csi-spa.com	OK 
Mr. Jan SKRIVANEK	CZ	jan.skrivanek@mocr.cz	
Mr. Peter HORN	DAIMLER	peter.horn@daimler.com	OK 
Mr. Richard DAMM	DE	richard.damm@bmvs.bund.de	OK 
Mr. Petr SEDIVY	DEKRA Prague	petr.sedivy@dekra-automobil.cz	
Mr. Martin HELLUNG-LARSEN	DK	mhl@fstyr.dk	
Mr. François RENAUDIN	DOREL	f.renaudin@fr-dorel.com	OK 
Mr. Erik SALTERS	DOREL	e.salters@nl-dorel.com	OK 
Mr. Paul DOYLE	EC	paul.doyle@ec.europa.eu	NOK Apologize
Mr. Dominique CESARI	EEVC	cesari@inrets.fr	NOK Apologize
Mr. José Luis GARCIA GARCIA	ES	jlgarcia@mityc.es	
Mr. Robert G. LAUPP	FAIR	rglaupp@laupp.at	OK 
Mrs. Ines LEVALLOIS	FAURECIA	ilevallois@brieres.faurecia.com	
Mr. Jussi SALMINEN	FI	jussi.salminen@mintc.fi	
Mr. Frank VAN WEST	FIA	f.vanwest@fiafoundation.com	OK 

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LIST OF PARTICIPANTS

5th MEETING - BMVIT - 2008/09/02

Mr. James ABRAHAM	FORD	jabra11@ford.com	NOK <i>Apologize</i>
Mr. Yannick SOUCHET	FR	yannick.souchet@equipement.gouv.fr	NOK <i>Apologize</i>
Mr. Kees WAAGMEESTER	FTSS	kwaagmeester@ftss.com	<i>K. Waagmeester</i>
Mr. Konstantinos N. SPENTZAS	GR	spenzas@mail.ntua.gr	NOK <i>Apologize</i>
Mr. Derek SAVILLE	GRACO	Derek.SAVILLE@newellco.com	OK <i>DS</i>
Mrs. Alimata DIARRA	GRACO	Alimata.DIARRA@newellco.com	OK <i>DIARRA</i>
Mrs. Susan MEYERSON	GRSP	susan.meyerson@dot.gov	OK <i>SLM</i>
Mr. Laszlo BADI	HU	badi@tuvnord.hu	
Mr. Sergi FERRIS	IDIADA	sferris@idiada.com	<i>Apologize</i>
Mr. Abhay MANNIKAR	IN	mannikar.psl@araiindia.com	NOK <i>Apologize</i>
Mr. Vinayak GOGATE	IN	vsg01303@incat.com	
Mr. François BERMOND	INRETS	francois.bermond@inrets.fr	NOK <i>Apologize</i>
Mr. Julio RODRIGO RUIZ	INTA	rodrigorj@inta.es	
Mr. François ABRAM	ISO	abram@iso.org	NOK <i>Apologize</i>
Mr. Antonio ERARIO	IT	antonio.erario@infrastrutturetrasporti.it	NOK <i>Apologize</i>
Mr. Takehisa YAMAKAWA	JAMA	tcs@jama-e.be	OK <i>Present</i>
Mr. Hiroyuki INOMATA	JASIC	inomata@jasic.org	
Mr. Takahiro HIRASAWA	JP	hirasawa-t2xp@mlit.go.jp	
Mr. Jae Wan LEE	KR	jwlee@kotsa.or.kr	
Mr. Philippe LESIRE	LAB	philippe.lesire@lab-france.com	
Mr. Jody MALONE	Learning Curve	jmmalone@rc2corp.com	
Mr. Shigeki WATANABE	MITSUBISHI	shigeki1.watanabe@mitsubishi-motors.com	
Mr. Uwe MAYER	MPA	Uwe.Mayer@mpa.uni-stuttgart.de	
Mr. Friedrich BEISSWAENGER	MPA	Friedrich.Beisswaenger@mpa.uni-stuttgart.de	NOK <i>Apologize</i>
Mr. Hans AMMERLAAN	NL	hammerlaan@rdw.nl	OK <i>Hammerlaan</i>
Mr. Asbjorn HAGERUPSEN	NO	asbjorn.hagerupsen@vegvesen.no	
Mr. Kris VAN DER PLAS	OICA	Kris.Van.der.Plas@honda-eu.com	OK <i>Kris</i>
Mr. Yves VAN DER STRAATEN	OICA	oica@oica.net	NOK <i>Apologize</i>
Mr. Tadeusz DIUPERO	PL	blb@pimot.org.pl	

GRSP_INF_CRS

LIST OF PARTICIPANTS

5th MEETING - BMVIT - 2008/09/02

Mr. Patrice CHANROND	PSA	patrice.chanrond@mpsa.com	OK <i>[Signature]</i>
Mr. Michael GROHSPIETSCH	RÖMER	michael.grohspietsch@de.britaxeuropa.com	OK <i>[Signature]</i>
Mr. Bernard FAVROT	RSA	bernard.favrot@renault.com	Apologize
Mrs. Véronique DENIER-BOBET	RSA	veronique.denier-bobet@renault.com	OK <i>[Signature]</i>
Mr. Vladimir SALNIKOV	RU	v.salnikov@bk.ru	
Mr. Roberto GASTALDI	SABELT	gastaldi@sabelt.com	
Mr. Göran ERIKSSON	SE	goran.eriksson@vv.se	OK <i>[Signature]</i>
Mr. Peter DAVIS	SMMT	pdavis@smtt.co.uk	NOK Apologize
Mr. Keiichiro NOJIRI	TAKATA	Keiichiro.Nojiri@takata.co.jp	OK 野尻 圭一郎
Mr. Adriaan SIEWERTSEN	TEAM TEX	adriaan@mi-go.eu	NOK Apologize
Mr. Jan GRUTTER	TRL	j_grutter@planet.nl	OK <i>[Signature]</i>
Mrs. Marianne LE CLAIRE	TRL	mleclaire@trl.co.uk	OK <i>[Signature]</i>
Mr. Heiko JOHANNSEN	TUB	Heiko.Johannsen@TU-Berlin.de	NOK Apologize
Mr. Rudolf GERLACH	TUV	rudolf.gerlach@de.tuv.com	OK <i>[Signature]</i>
Mr. Vladimir SATOCHIN	TUV SUD	vladimir.satochin@tuv-sud.cz	OK <i>[Signature]</i>
Mr. Jim HAND	UK	Jim.Hand@df.gsi.gov.uk	OK <i>[Signature]</i>
Mr. Edoardo GIANOTTI	UNECE	Edoardo.Gianotti@unece.org	NOK Apologize
Mr. Luis MARTINEZ SAEZ	UPM	luis.martinez@upm.es	OK <i>[Signature]</i>
Mrs. Mary VERSAILLES	US	mary.versailles@dot.gov	NOK Apologize
Mr. Pierre CASTAING	UTAC	pierre.castaing@utac.com	OK <i>[Signature]</i>
Mr. Jean-Philippe LEPRETRE	UTAC	jean-philippe.lepretre@utac.com	NOK Apologize
Mrs. Dominique VOUILLOZ	UTAC	vouilloz@utac.com	NOK Apologize
Mr. Eva WALKHED	VOLVO	ewalkhed@volvocars.com	NOK Apologize
Mr. Michael DEGENER	VW	michael.degener@volkswagen.de	OK <i>[Signature]</i>
Mr. Kabini MKONDO	ZA	mkondoka@sabs.co.za	
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Action Number	Action	Target Date	Action By	Comp Date
1.1	Terms of reference	01/04/08	Chairman	01/04/08
1.2	Test Bench definition – Information/Presentation following NPACS protocol	13/05/08	OICA / CI	13/05/08
1.3	R point / Cr point correlation	Postponed 13/05/08	MPA	13/05/08
1.4	Floor positioning versus R (H) point	Postponed 13/05/08	OICA	13/05/08
1.5	Classification – Anthropometry data	01/04/08	CLEPA	01/04/08
1.6	Classification – Load level in Isofix anchorages	Postponed 13/05/08	OICA / CLEPA	13/05/08
1.7	Dummies – FTSS presentation	13/05/08	RDW / EEVC WG12	13/05/08
1.8	Dummies – Results from test labs	13/05/08	All	
1.9	Dummies – NPACS experience	13/05/08	CI	13/05/08
1.10	Dummies – DFT Validation	13/05/08	DFT	13/05/08
1.11	Side Test protocols in the world	13/05/08	CLEPA	13/05/08
1.12	Validation of door velocity in side impact procedure	Postponed	OICA	
1.13	APROSYS study on vehicle's interior arrangement	Postponed	UPM	02/09/08
1.14	Misuses – Marking of Isofix anchorages	ASAP	TUV Rheinland	
1.15	Information to GRSP concerning CRS regulation for Buses and Coaches	05/08	IDIADA	05/08
1.16	Pulses – Presentations/Analysis	Postponed	UTAC	18/06/08
1.17	ISO data on accidentology and accident scenario	Postponed 13/05/08	ISO	13/05/08
1.18	EEVC WG18 final report	01/04/08	EEVC WG18	01/04/08
1.19	Invitation of EEVC WG12, WG18 and TUB	01/04/08	Secretary	01/04/08
2.01	EEVC WG18 final report (version of February 07)	18/06/08	Netherlands	

Action Number	Action	Target Date	Action By	Comp Date
2.02	NPACS study on rear impact	18/06/08	IDIADA	Postponed
2.03	US situation on rear impact	18/06/08	Chairman	Postponed
2.04	Side impact data upgraded	18/06/08	LAB	Postponed
2.05	Dummy family comparisons by NPACS	13/05/08	TRL	13/05/08
3.01	Comparison between ECE.R44 and NPCAS test bench	18/06/08	TRL	02/09/08
3.02	Information on acceptable limits of vehicle floor	18/06/08	All	
4.01	Classification – Load level in Isofix anchorages	02/09/08	OICA	
4.02	Dummies – Repeatability and reproducibility in Q-family	02/09/08	All	
4.03	EEVC WG18 Chairman to discuss for future collaborations	02/09/08	Chairman	02/09/08
4.04	Information on safety level for A P10 dummy with CRS in case of accidents (tests)	02/09/08	Daimler	Postponed
4.05	Background on Directive 2003/20/EC	02/09/08	Chairman	
4.06	Synthesis document on Q-series family upgrades	02/09/08	FTSS	
4.07	Tests to assess differences between ECE.R44 and R94 pulses	02/09/08	UTAC	
5.01	Draft proposal on a new test bench	07/10/08	TRL	
5.02	Table with anthropomorphic data	07/10/08	NL	
5.03	A workshop may be organized after the next meeting, if needed.	25/11/08	FTSS	
5.04	Working Document Matrix: Issue / Subject	07/10/08	NL	

Document Number	Title	Origin
INF GR / CRS-5-6	Minutes of 5 th meeting of the Informal Group on Child Restraint System	Secretary
INF GR / CRS-5-5	Proposal Regarding Amendment of the CRS Regulation at the Informal Group on child Restraints	JASIC
INF GR / CRS-5-4	ISOFIX load measurements	CLEPA
INF GR / CRS-5-3	NPACS test bench	TRL
INF GR / CRS-5-2	(APROSYS) Evaluation of the side impact test procedure proposed by IHRA/SIWG	INSIA
INF GR / CRS-5-1	Provisional Agenda for 5 th meeting of the Informal Group on Child Restraint System	Chairman
INF GR / CRS-4-9	Minutes of 4 th meeting of the Informal Group on Child Restraint System	Secretary
INF GR / CRS-4-8	Japanese accidentology presentation	JASIC
INF GR / CRS-4-7	Study of the performance of restraints used by children aged three years and under, with recommendations for the development of the new Regulation	Consumer International
INF GR / CRS-4-6	Full-scale Tests with and without ISOFIX	TUB
INF GR / CRS-4-5	Short report on Forward Component in ISO Side Impact Test Procedure for CRS	TUB
INF GR / CRS-4-4	Short report on Side Impact Testing with Big Rear-Facing Scandinavian Child Restraints	TUB
INF GR / CRS-4-3	ECE.R94 / EuroNCAP / PDB pulses comparison	UTAC
INF GR / CRS-4-2	Q-dummies Update (2004-2006) Presentation	FTSS
INF GR / CRS-4-1	Provisional Agenda for 4 th meeting of the Informal Group on Child Restraint System	Chairman
INF GR / CRS-3-18	Minutes of 3 rd meeting of the Informal Group on Child Restraint System	Secretary
INF GR / CRS-3-17	Load level in Isofix Anchorages	CLEPA
INF GR / CRS-3-16	Side Impact Test Methods for Evaluating Child Restraint Systems. A Summary for GRSP Informal Group on Child Restraints Systems	CLEPA
INF GR / CRS-3-15	Dummies NPACS comparison	TRL

INF GR / CRS-3-14	Q-dummies ready to enter regulations	FTSS
INF GR / CRS-3-13	Child Occupant Protection Research & Considerations for Future Regulations	Canada
INF GR / CRS-3-12	JPMA/Vehicle Manufacturer LATCH WG	US
INF GR / CRS-3-11	Classification - Anthropometry	CLEPA
INF GR / CRS-3-10	Data from child anthropometry data base CANDAT	Netherlands
INF GR / CRS-3-9	Selection of Size of Child Restraints	Australia
INF GR / CRS-3-8	Indicative Anthropometric Data	Australia
INF GR / CRS-3-7	Data on floor position	OICA
INF GR / CRS-3-6	Location of ISOFIX Top-tether anchorages Location of Cr-Point	OICA
INF GR / CRS-3-5	NPACS presentation	TRL
INF GR / CRS-3-4	ISO information on CRS International Standards	ISO
INF GR / CRS-3-3	SMMT directions	SMMT
INF GR / CRS-3-2	ISO/TR 14646 - Road vehicles - Side impact testing of child restraints systems	ISO
INF GR / CRS-3-1	Provisional Agenda for 3rd meeting of the Informal Group on Child Restraint System	Chairman
INF GR / CRS-2-8	Minutes of 2nd meeting of the Informal Group on Child Restraint System	Secretary
INF GR / CRS-2-7	NPACS Final Report_Project Report Version2.pdf	TRL
INF GR / CRS-2-6	WHO_Growth.ppt – Anthropometric data	UPM
INF GR / CRS-2-5	05-0157-O.pdf – ESV presentation	EEVC WG18
INF GR / CRS-2-4	CANDAT_data.pdf – Anthropometric data	Netherlands
INF GR / CRS-2-3	EEVC WG18 report	Netherlands
INF GR / CRS-2-2	Proposal for Terms of Reference and Rules of Procedure	Chairman

INF GR / CRS-2-1	Provisional Agenda for 2 nd meeting of the Informal Group on Child Restraint System	Chairman
INF GR / CRS-1-8	Minutes of 1st meeting of the Informal Group on Child Restraint System	Secretary
INF GR / CRS-1-7	Informal document No.GRSP-42-27	GRSP
INF GR / CRS-1-6	Informal document No.GRSP-42-02	GRSP
INF GR / CRS-1-5	Proposed Schedule for a Review of ECE Regulation 44.03	EEVC WG18
INF GR / CRS-1-4	Effect of Q-dummies and Criteria on the EEVC Test Database Results	EEVC WG12&18
INF GR / CRS-1-3	Injury Criteria for Q Dummies	EEVC WG12&18
INF GR / CRS-1-2	DRAFT OF Q-DUMMIES INJURY CRITERIA	EEVC WG12
INF GR / CRS-1-1	Provisional Agenda for 1st meeting of the Informal Group on Child Restraint System	Chairman