Informal document **GRSP-52-25**
(52nd GRSP, 11 - 14 May 2012,
agenda item 16)

52nd GRSP Session
Status report of
Informal Group on FI

Pierre CASTAING

Chairman

Target

- The Chair of the informal working group on Frontal Collision introduced the last progress report of his group (GRSP-51-26). He informed GRSP that the informal working group would consider existing tools and make use of results from ongoing research programs on this matter at the international level. He informed that, as a first step and as a follow-up of these results, the group would propose an amendment to UN Regulation No. 94 by the May 2014 session of GRSP.

Meetings

- 16th Meeting – 11 October 2012 – OICA Paris
- 17th Meeting - 23 November 2012 – EC Brussels
- 18th Meeting – 24 January 2013 – OICA Paris
- 19th Meeting – 27 February 2013 – EC Brussels
- 20th Meeting – 09 April 2013 – OICA Paris

					Configuration				
					Structural Integrity		Restraint Test		
					Fuel leakage/ HV				
					40% Offset,		FWB, 50km/h		✓
					ODB, 56km/h		[FWRB] [FWDB]		to be decided
					Driver	Passenger	Driver	Passenger	✓
					50% HIII	[50% HIII]	50% HIII	[50% HIII]	to be decided
Criteria	A	Occupant	1	HPC	1000	1000	1000	1000	✓
			2	aHead 3ms	80g	80g	80g	80g	✓
			3	Neck tension	1,1 kN (60ms) 2,9 kN (35ms) 3,3 kN (0ms)	1,1 kN (60ms) 2,9 kN (35ms) 3,3 kN (0ms)	1,1 kN (60ms) 2,9 kN (35ms) 3,3 kN (0ms)	1,1 kN (60ms) 2,9 kN (35ms) 3,3 kN (0ms)	additional informantion needed (--> elderly occupants)
			4	Neck shear	1,1 kN (>45ms) 1,5 kN (25-35ms) 3,1 kN (0ms)	1,1 kN (>45ms) 1,5 kN (25-35ms) 3,1 kN (0ms)	1,1 kN (>45ms) 1,5 kN (25-35ms) 3,1 kN (0ms)	1,1 kN (>45ms) 1,5 kN (25-35ms) 3,1 kN (0ms)	additional informantion needed (--> elderly occupants)
			5	Neck Moment-ext.	57 Nm	57 Nm	57 Nm	57 Nm	Review if dummy changes
			6	[ThCC]	50mm ?	50mm ?	50mm ?	50mm ?	[DEQ]
			7	V*C	1,0 m/s	1,0 m/s	1,0 m/s	1,0 m/s	[DEQ]
			8	FCC	7,58 kN (10ms); 9,07 kN (0ms)	7,58 kN (10ms); 9,07 kN (0ms)	7,58 kN (10ms); 9,07 kN (0ms)	7,58 kN (10ms); 9,07 kN (0ms)	✓
			9	TCFC	8kN	8kN	NA	NA	✓
			10	Kneeslider	15 mm	15 mm	NA	NA	✓
			11	TI	1,3	1,3	NA	NA	✓
	B	Structural Integrity	11	Steerig w heel displacement	Z < 80 mm; x < 100 mm		no measurement		✓
			12	Door locking/ opening			?		to be decided
			13	Dummy removal	opening force buckle 60N		opening force buckle 60N		✓
			14	Fuel leakage	30g/min		?		to be decided
			15	EVS requirements	to be inserted		?		to be decided
	C	Compatibility	21	Geometry alignment	-				to be decided

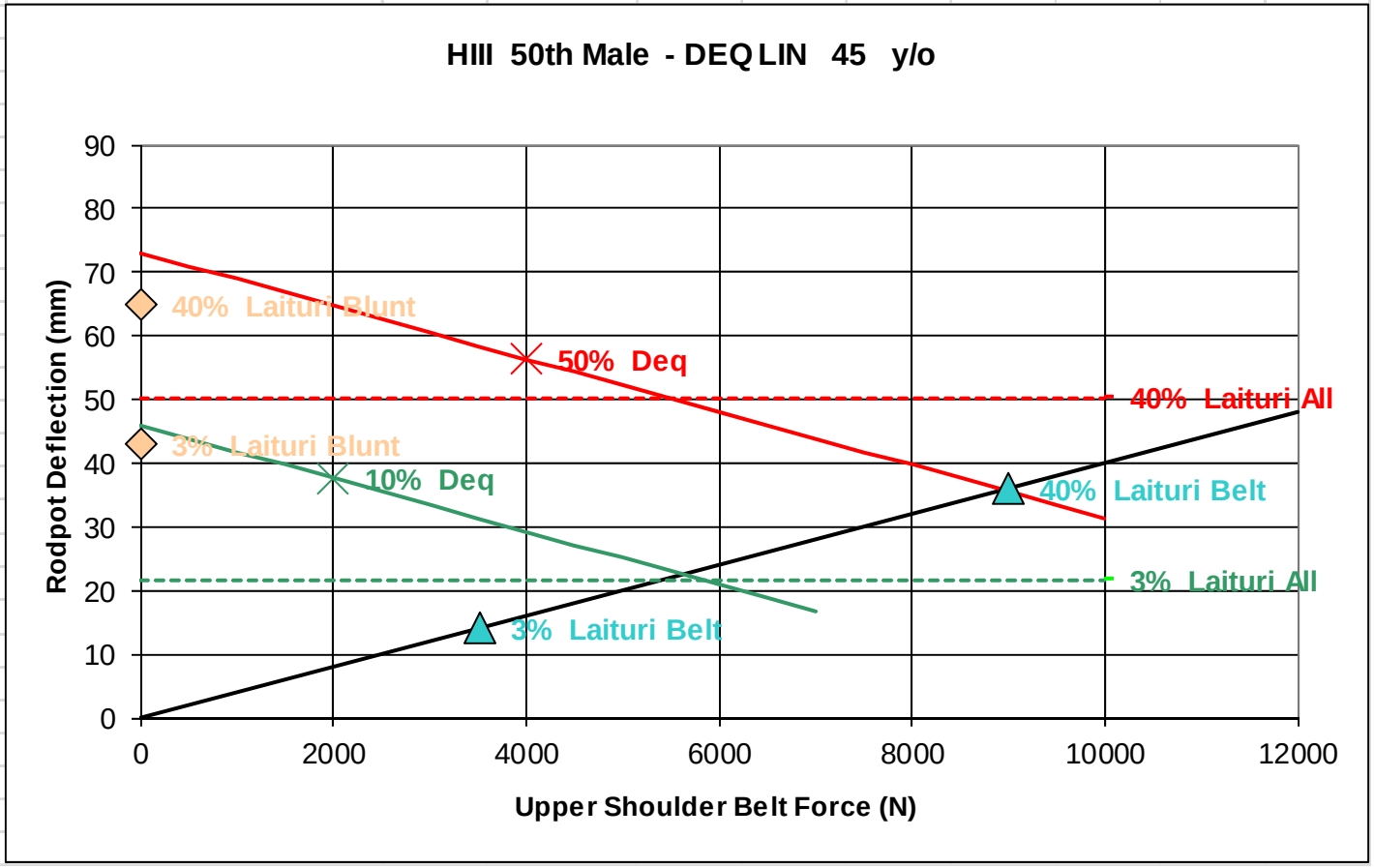
Expertise needed

- An expert group to validate the use of thorax injury prediction tools (DEQ, Rib Eye) for the H3 (target end of 2012)
  - Work done in parallel with Euro NCAP
  - This group is today constituted by Norbert Praxl(PDB), Andre Eggers (BASt) and Xavier Trosseille (LAB) and meet on 29 November 2012

- An expert group to conduct an impact assessment until the end of 2013
  - Work not yet started

DEQ calculation threshold simplified routine

						Laituri			Deq	
Gender (Male=0 ; Female=1)	0	50th Male	1		3%	22		10%	39
Age	45				40%	50		50%	61



Quotation criteria

	RAW				Weighted			
	Rodpot	DeqLIN	Multi-deflection	Weight	Rodpot	DeqLIN	Multi-deflection	
Usability								
Measurement available	1	1	1	1	1	1	1	could it be used in phase 1 new R94 ?
Measurement available for all cars	1	1	1	1	1	1	1	Is there any difficulties to be used in somes cars ?
Cost	1	1	1	1	1	1	1	Cost of the device
Criterion available	1	1	1	1	1	1	1	including IRC
Effort to apply	1	1	1	1	1	1	1	criterion and analysis
calibration of the measurement system	1	1	1	1	1	1	1	calibration procedure available ? Quality of the measurement ?
					6	6	6	
Efficiency								
Predictability of the risk	1	1	1	1	1	1	1	need to agree on a validation sample. C value as a criterion ?
Quality of the injury risk curve	1	1	1	1	1	1	1	based on the size of the confidence intervals
Protect elderly	1	1	1	1	1	1	1	IRC for different ages ?
					3	3	3	
Sensitivity								
Discriminate Belt/airbag	1	1	1	1	1	1	1	distributed/concentrated loading
Discriminate pelvis restraint	1	1	1	1	1	1	1	knee airbag, blocking tongues…
Side effects	1	1	1	1	1	1	1	does the criterion encourage bad solutions ? (for instance no belt ?)
Applicable to restraints types	1	1	1	1	1	1	1	3pt belt, harness, inflatable belts
Dependent on the belt path	1	1	1	1	1	1	1	belt path on the thorax, anchorage geometry… should it be ?
					5	5	5	

Open issues

- Availability of dummies definition and parts:
  - 5th percentile harmonised jacket if we want to use 5th percentile dummy
- Qualification of DEQ criteria
- Validity of the FIMCAR results at 50 kph
- Repetability and Reproducibility of results on FWDB
  - Recent barrier specifications must be reevaluated and retested to confirm repeatable performance at the proposed test speed of 50 km/h
- Benefit from FWDB versus FWRB

Benefit from FWDB versus FWRB

The benefits of three potential changes to the frontal impact regulation were calculated for GB and Germany and scaled to give an indicative estimate for Europe.

- For Option 1 'No change', a small benefit of about **2.0%** or less of all car occupant Killed and Seriously Injured (KSI) casualties was estimated;
- For Option 2 'Add FW test: Benefit of **5% to 12%** of all car occupant KSI casualties was estimated. It was shown that this benefit consisted of:
  - Structural alignment (under/override related to structural alignment): **0.3% - 0.8%**. However, it should be noted that the benefit related to structural alignment was likely to be underestimated.
  - Restraint system:(restraint related deceleration related injuries): **5% - 11%**
- For Option 3 'Add FW test and replace ODB test with PDB test' **7% to 14%** of all car occupant KSI casualties.

Note: Benefit percentages for Options 2 and 3 do not include the benefit of Option 1 'No change'.