

Minutes of the 4th meeting of the Task Force Bumper Test Area (TF-BTA) within the IG GTR9-PH2	
Venue	Offices of the “Comité des Constructeurs Français d’Automobiles” (CCFA – French Automobile Manufacturer Committee), 2 rue de Presbourg, 75008 Paris / France
Date	11 Sept. 2013
Status: Final	

1. Welcome
(Chair)

Mr Broertjes welcomed the attendees and thanked CCFA for kindly providing the meeting room. Also, he thanked Humanetics for providing the WebEx access.

The meeting was chaired by Mr Broertjes, the secretariat was provided by Mr Kinsky.

2. Roll call of participants

See attendance list (attachment).

In addition, Ms Buckman (OICA/Ford), Mr Burleigh (Humanetics) as well as Mr Edwards (OICA/Alliance) attended via WebEx/telephone.

3. Adoption of the agenda
(all)
(this document)

The agenda was adopted without amendments. However, it was noted that some presentations are available and it was agreed that they will be brought in during the running order of the meeting.

4. Review of the draft minutes of the 3rd Meeting in Washington
(all)
(document TF-BTA-3-02)

The minutes of the last meeting were adopted with some amendments. They will be shared as document TF-BTA-3-02r1.

5. Review of the action list from the last meeting
(all)
(agenda item 8 of document TF-BTA-3-02)

The action list was reviewed. It was noted that several of the action items are subject of discussion in this meeting.

In addition, the chair pointed out that he hopes to see more test results from the outer end of the test area from the US in the near future. Obviously, with the new small overlap test conducted by IIHS the outer ends of the bumpers become of more interest. Also, he hopes to get information on this from NHTSA from their preparation testing for the future introduction of pedestrian safety legislation in the US. Ms Medri responded that unfortunately, at least for the time being, she does not have relevant information or test data to share.

Mr Roth presented a short overview of tests conducted at Audi with the THUMS in comparison to the FlexPLI models (document TF-BTA-4-03). He explained that the activities followed the request from the last meeting to test the THUMS and the FlexPLI at angular surfaces. The tests were conducted at the vehicle center line with a 30 degree angle to assure that the influences of the curved vehicle surface is not over-represented. Mr Roth explained that already in an early phase of the FlexPLI the legform starts rotating while the THUMS model representing a full human body does not rotate. Therefore, it can be concluded that – as it was already shown in document TF-BTA-3-03 – the FlexPLI cannot reproduce the behavior of a human leg (as part of a full body) in the outer test area.

6. Update on the EC study and Terms of Reference

(TRL, European Commission)

(new document expected)

Mr Carroll presented document TF-BTA-4-04 to show the status of TRL's activities on behalf of the European Commission. He explained, that with document TF-BTA-3-06r1 the initial progress had already been shown. Since then, TRL has double-checked again the rationale for using the 60 degree planes for the definition of the bumper corners. However, no clear rationale can be provided for the historic switch from 45 to 60 degree, the EEVC records just use harmonization with UN Regulation 42 as a reference for this.

Nowadays, the 60 degree definition is also used in the legislation on pedestrian safety. However, UN R127 on pedestrian safety uses the 60 degree as limit of the test area (with tests being conducted half a diameter of the impactor inside) while R 42 defines the corner to be the center of the impact. It was also noted that Euro NCAP extended the bumper test area to the end of the bumper beam and found some hard points in that extended area. However, Euro NCAP also noted some issues with the sliding of the impactor at oblique surfaces.

Mr Carroll explained also that according to the findings of TRL the testable areas have decreased with newer vehicles. Mr Roth noted that nevertheless the protection has significantly improved with newer vehicles as can be seen from the performance during the testing. This should be considered accordingly in the accident studies which are obviously based on older vehicles.

Since the last meeting, TRL has also finished their accidentology study. It is based on data of OTS – the **On The Spot** Accident Research in the UK – and GIDAS – the **German In-Depth Accident Study**. The results will be presented later in the meeting. Also, some testing has started in between that is planned to be finished in September and then will be analyzed which should be done by end of October.

Mr Carroll then presented from the accident data collected by TRL (see document TF-BTA-4-05). General accident figures were available for the UK from STATS19 and for Germany from CARE. Accident figures seem comparable for the two statistical databases. However, UK figures seem to over-represent severe and fatal injuries.

More detailed analyses of single accident cases were made available from OTS in the UK and from GIDAS. Mr Carroll noted that the number of casualties increase from the offside (driver's side) to the nearside (curb side) for both databases. GIDAS data show a clearer trend on this than OTS data. However, no point of the bumper seems to be more or less likely to be struck by a pedestrian.

Data were also analyzed regarding the gender of the pedestrians, the movement of the pedestrians as well as the vehicles' ages.

Finally, Mr Carroll showed analyses regarding the injury risk over the width of the bumper. For whole-body MAIS1 and MAIS2 casualties in the OTS data low variation is seen over the width of the bumper, maybe with a slight peak at the vehicle center line. MAIS3+ casualties in the OTS data are more frequent to the nearside (curb side). However, it needs to be noted that legform injuries can be maximum MAIS3 which also needs to be considered. For GIDAS, MAIS1 data are similar as in the OTS database while for MAIS2 the casualties are more common at the outskirts of the bumper. MAIS3+ casualties are fairly consistent one side to the other. Further analyses were performed for the single AIS values. All in all it can be concluded that AIS1 and 2 injuries are mainly lower leg injuries and AIS3+ are also upper leg injuries. However, the low numbers of casualties / injuries inhibit the potential for detailed analysis. Whilst trends were difficult to establish, there did not seem to be evidence that the last 20% of the bumper on either side was safe from causing AIS 1, 2 and 3 lower extremity injuries.

Mr Broertjes wondered whether it can be justified that vehicles with a more rounded shapes cause less severe injuries due to pushing the pedestrians to the side and whether this results in more ground contacts. Also, it would be interesting to know whether the ground contacts are more severe. Mr Carroll answered that, unfortunately, the data are unlikely to answer this. Due to the low numbers of cases available from the in-depth datasets, further disaggregation to split newer cars with more rounded shapes would not provide useful information to address that question. Mr Hardy added that a pedestrian accident is a very complex process and both injuries from the vehicle and ground contact can be seen: A contact at the vehicle side, e.g. at the A-pillar, can be very severe but also a ground contact can be very severe.

Mr Roth asked whether the injury data can be split according to the vehicle shape. At least from GIDAS data this should be possible. Mr Carroll responded that this was not done due to the available number of cases, he will enquire whether this is possible as further analysis. Mr Roth then also noted that in a GIDAS based study done for the Euro NCAP discussion on the bonnet leading edge testing only one casualty was remaining. This does not fit the figures of TRL. Therefore, he was wondering which filter criteria were used. Mr Carroll could not answer this on short notice but promised to double-check these details.

Mr Schmitt wondered whether it would be better to mirror the data of one of the databases to better compare them. Mr Carroll pointed out that the comparison can easily be done using the nearside and the offside split of the data since this is independent of the position of the steering wheel. However, he acknowledged the potential confusion and will investigate improved ways of showing this type of data in the future.

Finally, Mr Carroll presented document TF-BTA-4-06 showing test results from testing with the EEVC LFI to positions outside the bumper corners. Three different vehicles were tested. Mr Carroll explained how the tests were conducted and analyzed the test results. He concluded that the tests confirmed the sensitivity of the impactor to rotation when tested against angular surfaces. Especially for the bending but also for the shearing significant rotation of the legform can occur before the peak value is reached. However, at the 45 degree impact position all peak values were relatively small. Mr Carroll concluded his presentation explaining that TRL also plans to conduct tests with the FlexPLI to research the same subject.

For some tests TRL had turned the vehicle. On request of Mr Schmitt Mr Carroll explained that for this the whole vehicle was turned (with respect to the legform launcher) to reduce the incident angle of the legform compared with the test when the vehicle was aligned with the firing direction.

The chair thanked Mr Carroll for his presentations. He explained that, seeing the test results, he would have some sympathy for changing the 60 degree planes to 45 degrees since this extends the test area but does not seem to be a big issue for the testing (peak values are within current limits). Mr Zander wondered whether the definition of Euro NCAP for the bumper test area could be used (not regarding bumper corners, but considering all hard bumper structure behind the entire bumper fascia). Mr Broertjes noted that it may be an issue to put this into regulatory wording but Mr Zander did not see this issue and also proposed that a manufacturer could provide the information on how wide the bumper beam is. This could ease the whole process.

7. Discussion on a new test procedure

7.1. Definition of the new test details (all)

The chair noted that, with the missing tests with the FlexPLI, it may be needed to extend the work of the group and to maybe separate it from the work of the Informal Group on gtr No. 9 – Phase 2. In addition, it may be sufficient to have further meetings. The attendees agreed that this is the case.

Mr Carroll mentioned that the tests with the FlexPLI will be conducted within the next two weeks. He then presented document TF-BTA-4-07 with the plans for the next testing based on the discussion earlier in this meeting and presentations of the tests with the EEVC legform. Also, Mr Carroll invited interested attendees to be present for the testing. Finally, the chair and Mr Carroll invited especially OEM's to support the testing with delivering spare parts.

7.2. Preferably: decision on and drafting of the test procedure for supply to the IG GTR9-PH2

(European Commission, all)

(Note of the secretary: Not discussed since no proposal was available.)

8. Review of action list

(Secretary)

The secretary noted that all action items from the last meeting were finished. Open items are the finalization of the tests by TRL and the request of the chair and TRL to support the testing with delivering spare parts.

9. Miscellaneous items, if any

(all)

None.

10. Next meeting, if needed

After some discussion it was finally agreed to have the next meeting on 13 Nov. 2013 in Brussels at the European Commission. The meeting will start at 10 a.m. and should finish by 4 p.m.

(Note of the secretary: Unfortunately, the meeting had to be canceled afterwards. A new date will be proposed by the chair in early 2014.)

Attachment: Attendance list

TF-BTA 4th Meeting
CCFA offices, Paris

11 Sept. 2013

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