

Minutes of 1 st Meeting of Technical Working Subgroup on Amendment 3 to GTR9	
Title	1 st Meeting of Technical Working Subgroup on Amendment 3 to GTR9
Place	Teams
Status	FINAL
Meeting Date	28 September 2021, 7am-10am EST / 1pm-4pm CEST / 8pm-11pm JST
Prepared By	Benjamin Bünger (Audi), Oliver Zander (BASt)
Purpose of Meeting / Agenda	Discussion on Markup Methods and Test Point Methods for Headform Test Procedure in GTR9 Amendment 3
Issue date	4 November 2021
Next meeting	2 November 2021, 7am-10am EST / 1pm-4pm CEST / 8pm-11pm JST
Invited	Interested Experts from Contracting Parties to the 58 and the 98 Agreements, OEMs and Suppliers

Attendees
<p> Irina Dausse (ID) Anders Fredriksson (AF) Jason Stammen (JS) Kazumi Watanabe (KW) Kenneth McCabe (KM) Peter Martin (PM) Gerhard Maurer (GM) Louis Molino (LM) Stefan Schinke (StS) Antje Sipido (AS) Toshiyuki Yanaoka (TY) Y Nozaki (YN) Yoshinori Tanaka (YT) Ansgar Pott (AP) Benjamin Bünger (BB) Mary Versailles (MV) Cornelis Thielen (CT) Dirk-Uwe Gehring (DG) Vincent Wu (VW) Oliver Zander (OZ) </p>

Meeting Minutes

1. Welcome and Overview

OZ opened the meeting with a roll call. He explained the purpose of the meeting to technically discuss the open issues related to draft Amendment 3 to GTR No. 9 in order to get a common understanding on what should be achieved with the Amendment. The group was tasked to report the results of the discussions back to the Task Force on Amendment 3, chaired by MV (NHTSA). This should be done in due time before the next GRSP meeting (6-10 December 2021), allowing sufficient time for the Task Force to prepare possible modifications of Draft Amendment 3.

OZ informed that all meeting documents were uploaded to the ftp server (<https://files.bast.de/index.php/s/pk4WdyfgyRk5A9H>) which was going to be used, for the time being, as a platform for distribution of the meeting documents.

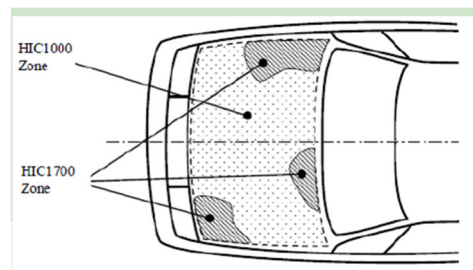
BB volunteered for taking some notes of the meeting regarding the results and main discussion points.

2. Adoption of the Agenda

No additional topics were added and no further documents were submitted. The agenda was adopted without any modifications.

3. Comparison of Markup Methods

OZ explained the discrepancy between GTR No.9 and the more detailed, and state-of-the-art, method revised in Draft Amendment 3 to GTR9 for clarity (TWSG-01-06). Areas outside the impact area, i.e. the offset zone (margin zone), cannot be predicted or assigned to HIC1,000 or HIC1,700 zones as no direct test results can be associated. A table comparing GTR No.9 and Draft Amendment 3 was shown to highlight the differences in wording. Chapters 5.2.3 and 5.2.4 in GTR No.9 describe the definition of the zones and the testing therein. The testing (and performance associated) is described afterwards. The zones and results cannot be applied to those areas where no tests have been performed in. Figure 11 in GTR No.9 already shows separations of zones related to a dashed line (offset line), but the lines have not been labelled (at all) in the respective figure.



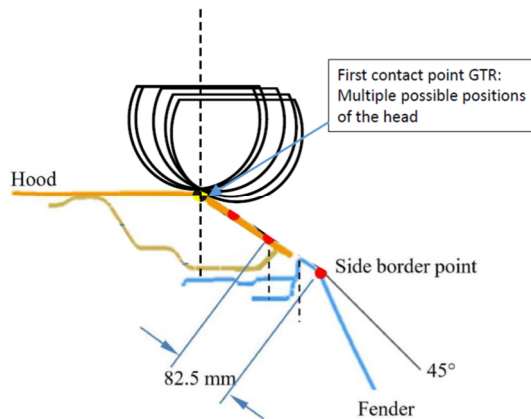
To avoid misunderstandings in self-certification or type-approval, clarification in GTR No.9 would be highly appreciated. Furthermore, it was mentioned that assigning the performance zones HIC1,000 and HIC1,700 to the bonnet prior to marking the offset lines could lead to lower requirements within the test area if performance in the offset zones was declared to meet HIC1,000 and thus leaving more area for HIC1,700 within the test zones.

PM stated that the sequence of test area determination was an interesting approach to clarify the situation. He understood the bonnet top and test zones to be linked and that the 82,5 mm margin zone was introduced later than the 2/3-rule for HIC 1,000 and HIC1,700 areas. A very small bonnet may have a disproportionate part of offset compared to the remaining test area. NHTSA aim for “maximizing safety by maximizing HIC1,000 zone”. It was replied that if there is a zone where test results cannot be clearly assigned to, this result would not be objective. This would lead to ambiguities in self-certification.

StS explained how a 3D-contact would lead to subjective positioning resulting in different HIC values assigned to the same target, depending on the OEM and/or test lab.

Difference between targeting methods „Measuring Point“ („2D“) and POFC („3D“)

Example: Technical Service choose a test point on an edge



First contact point („3D“) method: multiple positions of head impactor possible, no repeatability or reproducibility given. OEM + TS need to know how a test point has to be tested.

DG referred to the EEVC WG 10 reports from 1994, emphasizing that the side margin zone of half of the impactor diameter was not included late in GTR No.9 drafting, but available rather long before the GTR. It was even earlier than introduction of HIC1,000.

MV recalled TWSG-01-07 (presentation on NHTSA concerns with proposed Amendment 3 to GTR9) and stated NHTSA understood that HIC1,000 in the tested zone must at least lead to a HIC1,000 area 2/3 of the area of the complete bonnet top.

2011 Honda Odyssey

	Values are Percent of Bonnet Top	
	NHTSA	Amendment
Child Test	100%	69%
Adult Test	0%	0%
No Test	31%	31%
HIC1000	67%	46%
HIC1700	2%	23%

Color Key

- No Test (NT)
- Child - NT



It was replied that this would result in a de-facto HIC1,700 assignment of the entire offset zones which would not be true or accurate. Besides, this wouldn't reflect but exceed the GTR9 (minimum) requirement of HIC1,000 over 2/3 of the test area. Furthermore, it would imply that at least 2/3 of the complete bonnet top area with a requirement of HIC1,000 must be testable (i.e. be located within the test area) which is not written in GTR9. In addition, the shown example (Honda Odyssey) would only allow a maximum of 2% of the testable area to be assigned to the HIC 1,700 zone. It was questionable whether this could be the intention of the introduction of the 1/3-2/3 rule.

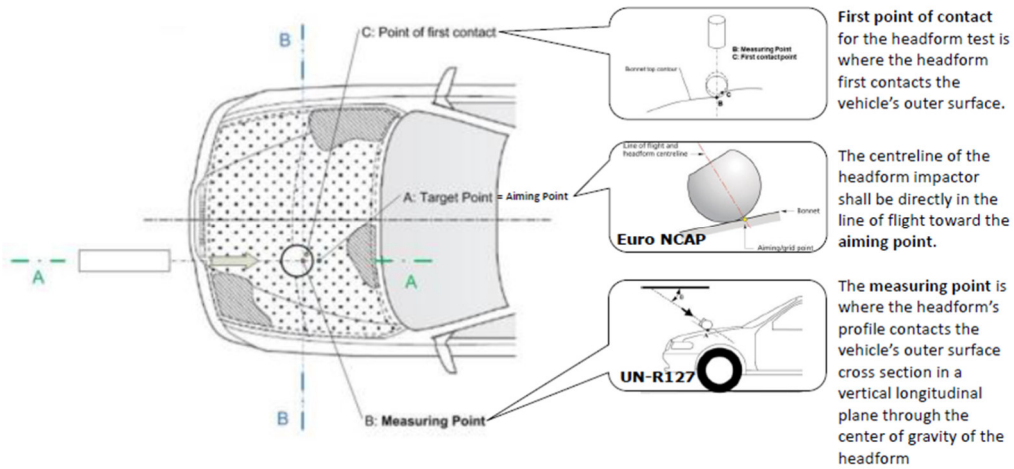
MV indicated that a proposal considering only the testable part of the bonnet top could be reasonable and that she may prepare such a proposal for the next meeting.

PM offered re-examination of the 2/3s. OZ reiterated that any prediction of the performance of the offset zone would be meaningless since there were no means for verification. He also expressed the need for a common understanding of whether HIC values could be assigned in the offset zone, i.e. allowing the center of gravity of the impactor aiming at the offset zone, or not.

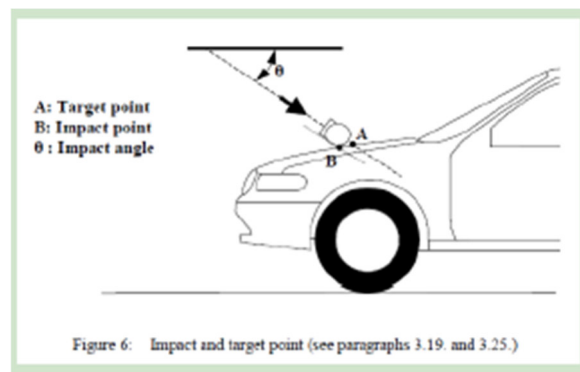
StS and GM requested further information regarding the US cost benefit analysis. MV and PM promised to present more details during the next meeting.

4. Comparison of Test Point Methods (3D vs. 2D alignment)

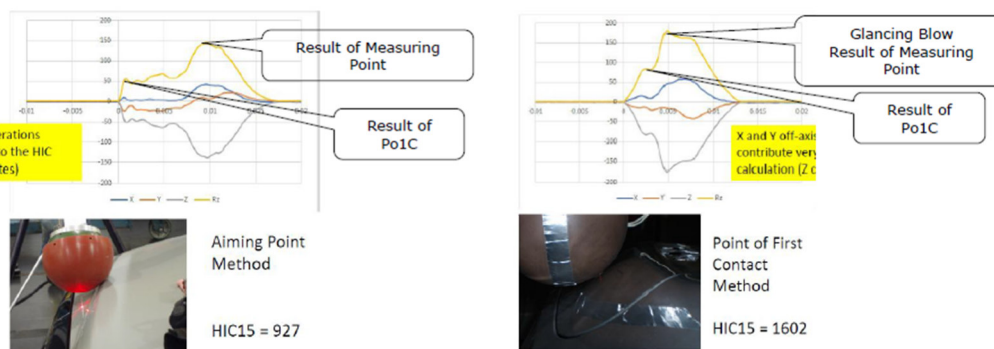
OZ explained the different concepts behind the target/aiming point, the point of first contact and the measuring point (TWSG-01-06).



3.19 of GTR No.9 described a 2D derived "impact point" and it related to the velocity vector without addressing lateral deviation.



If there was a misunderstanding in the impactor alignment, tests with the impactor virtually outside the test zone would result. Target and measuring points were stated mainly contributing to the test result, with data supporting the statement.



The group was asked for opinions on main contributing factors to the HIC calculation. Further discussions were postponed to the next meeting

5. Pros & Cons

Since a common understanding and agreement on the sequence of the markup as well as on the main contributors to measured headform accelerations were not concluded, the discussions on the pros and cons of the different methods and drafting of a compilation table were deferred to a possible next meeting.

6. Next Steps

MV asked if there was a value in a follow-up meeting of the smaller group prior to the next GRSP. It was agreed upon a next meeting to be held for further technical discussions would be of benefit and valuable input for the Task Force.

OZ repeated his aim is to first create a common understanding on a technical basis regarding:

- Markup sequence
- Main contributing factors to the actual headform acceleration (measuring point, target/aiming point, CoG, first contact point).
- The permission of tests in the offset zone

In a second step, the intention would be to implement a consensus with regards to markup and test area within the Draft Amendment 3, if and wherever possible.

7. AOB

The next meeting was scheduled for 2 November 2021, 7am-10am EST / 1pm-4pm CEST / 8pm-11pm JST.

The group members were asked to submit documents for the next meeting in due time prior to the meeting for upload onto the ftp server, giving all attendees the possibility for a thorough preparation.

OZ thanked all participants for their contributions and closed the meeting.