Draft Minutes
Regards to the 9th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting
Date: 3rd-4th September 2009 (10:30 – 17:30)

Place: BASt (http://www.bast.de/) – Bergisch Gladbach, Germany

DAY 1 (3rd Sep 2009): Experts Meeting on Specific Topics
(Mainly for experts/interested persons)
Room: Fritz-Heller-Saal
Participants :
A. Konosu （Chairperson/J-MLIT/JARI）
M. Burleigh （Secretariat/FTSS-Europe）
O. Zander (BASt)
D. Gehring (BGS)
O. Ries and C. Hoffman (ACEA/VW)
R. Fleischhacker (ACEA/Porsche)
T. Kinsky (ACEA/Opel)
A. Sipido (ACEA/Ford)
C. Hess (ACEA/Audi)
N. Lubbe (ACEA/Toyota Europe)
Y. Takahashi (JAMA/HONDA)

1. Opening for DAY 1: Welcome and Self introduction

- The Chairperson expressed his appreciation to the participants as well as to BASt, which provided the conference room.
- Members introduced themselves.
- Agendas (TEG-###) were finalized after incorporating several corrections (TEG-###).

2. Discussion and Recommendation: Injury Threshold Values

2.0. General Approach

- Mr. Gehring (BGS): The methods for obtaining the injury threshold values were discussed by the main related groups including BASt and JAMA after the 8th Flex-TEG meeting, but no single method (analysis method, database, etc.) was found acceptable by all groups. On the other hand, the injury criteria currently proposed by each group are being converged into a single value. Therefore, why don't you establish a single injury threshold value without further discussions on the method for obtaining it because discussions may be endless?

- Related groups: Agreed.
- Following discussions and decisions on the threshold values proceeded according to this proposal.

2.1. Tibia

- Mr. Gehring (BGS): How about establishing an injury threshold value for the tibia of flexible legform impactor (Flex-GTR) as 340Nm based on the discussions held so far between related groups?
- ACEA: We agree to 340Nm since it was obtained from studies of impact biomechanics conducted by BASt and JAMA. However, its technical feasibility has not yet been confirmed, so we propose to express it in brackets for the present.
- JAMA: We agree to [340] Nm for the same reason as ACEA.
- BASt: We agree to [340] Nm for the present.
- Chairperson: Since agreements of related groups were obtained, we will establish the injury threshold value for tibia of the flexible legform impactor (Flex-GTR) as [340] Nm for the present and will remove the brackets based on the result of technical feasibility studies that will be conducted by ACEA and JAMA by the next GRSP.
- TEG: Agreed.

ACTION TEG-048

- **ACEA and JAMA will conduct technical feasibility studies by the next GRSP in order to remove the brackets from [340] Nm.**

2.2. MCL

- Mr. Gehring (BGS): How about establishing the injury threshold value for the MCL of the flexible legform impactor (Flex-GTR) as 22mm based on the discussions held so far between related groups?
- ACEA: The 22mm value was obtained from studies of the impact mechanism by JAMA (TEG-###), so we agree to accept it. However, we propose to express it in brackets from the viewpoint of technical feasibility.

- JAMA: We agree to [22] mm for the same reason as ACEA.
- BASt: We agree to [22] mm. This value is agreeable also in light of the result of the separate analysis of correlations between the EEVC/WG17 impactor and Flex impactor conducted by BASt.
- Chairperson: Since the related groups agreed, we will establish the injury threshold value for the MCL of flexible legform impactors as [22] mm for the present and will remove the brackets based on the results of technical feasibility studies to be conducted by ACEA and JAMA by the next GRSP.
- TEG: Agreed.

ACTION TEG-049

- **ACEA and JMA will conduct technical feasibility studies by the next GRSP in order to remove brackets from [22] mm.**

2.3. ACL/PCL

- BASt: We also propose adding ACL and PCL to injury evaluation items and establishing their criterion as 13mm. Since regulations for protecting the ACL and PCL (shear displacement 6mm) are provided in the current gtr9, we propose to impose similar requirement on flexible legform impactor.
- JAMA: There are very few cases in which the ACL or PCL suffers from injury independently in actual pedestrian accidents (3%). Moreover, there is little data of human body resistance for establishing the injury criteria for the ACL and PCL. Therefore, we propose to monitor the ACL and PCL for the present.
- ACEA: We propose to monitor the ACL and PCL or impose no requirements on them for the same reason as JAMA.
- Chairperson: BASt's desire is partially based on political motives, so we will request GRSP to make a judgment on this case without further discussions in TEG.
- TEG: Agreed.

2.4. Other

- ACEA: Data of impact bio-mechanics concerning the injury criteria for the Tibia and MCL of flexible legform impactors were exchanged between the main related groups after the 8th Flex-TEG meeting (TEG-###, ###, ###). We would like to prevent such data from being used without permission for discussing the revision of gtr9 without further discussions in TEG. Therefore, we want to leave the following statement in the meeting minutes.
  - "TEG finally agreed on 340 Nm and 22mm on a biomechanical point of view considering all the information that has been exchanged during and in between the meetings, however TEG also notes that regarding this information no common agreement could be reached regarding the approaches and regarding the processing of the data so that the information published in the exchanged documents relating to biomechanics should not be used without further discussion. Not all documents are supported by all TEG members but for the time being the above thresholds can be agreed. Feasibility and impact on future design of vehicles needs to be checked."
- TEG members: We agree.

3. Discussion and Recommendation: Dynamic Calibration Test Method and Requirement Corridor

3.1. Pendulum Type or Inverse Type

- Chairperson: The methods for conducting dynamic calibration tests were discussed by the main related groups (BASt, JAMA, ACEA, JARI, and FTSS) after the 8th Flex-TEG meeting, but no single method for dynamic calibration tests was agreed upon by all related groups. In this situation, discussions may continue indefinitely. As a possible solution, can we allow each test laboratory to select either the Inverse-type or Pendulum test?
- Mr. Gehring (BGS) and Mr. Hoffmann (VW): How about combining the two test methods? In practical terms, there is an idea that inverse-type tests should be conducted before the homologation car test series, pendulum tests should be conducted after 10 tests on actual vehicles, and inverse-type tests shall be done again after 30 tests on actual cars.
- Chairperson: OK, then let's consider the two ideas of (1) giving options to test laboratories and (2) combining the Inverse-type and Pendulum tests as candidates and decide which to adopt on the second day.
- TEG members: We agree.

3.2. Requirement Corridor

- Chairperson: Currently, two methods, i.e., the FTSS method and the BASt method, have been proposed for making the corridor.
- JAMA-JARI: As stated in TEG-###, the FTSS method sets the minimum width of the corridor to ±10% even if the impactor variation is less than ±10%, so we cannot support it. In the BASt method, however, the width of the corridor may vary largely depending on the test data obtained, so we believe that a method for removing outlying data from the test data in use should be added.
- Mr. Burleigh (FTSS): The minimum width specification of ±10% was established when there was little test data. At present, the test data have increased sufficiently that we can specify a standard deviation of ±2% without adopting the 10% specification.
- Mr. Zander (BASt): The data that BASt used for preparing the corridor have been confirmed to exclude outliers, so there is no problem in the data used this time. We believe that the BASt method reflects the actual performance of impactors more exactly.
- TEG members: We agree to adopting the BASt method as a result of discussions.

********** **End of the DAY 1** **********

DAY 2 (4th Sep 2009): The 9th Flex-TEG meeting (for all TEG members)
Room: Fritz-Heller-Saal
Participants :
A. Konosu （**Chairperson/J-MLIT/JARI**）
M. Burleigh （**Secretariat/FTSS-Europe**）
O. Zander (BASt)
D. Gehring (BGS)
O. Ries and C. Hoffman (ACEA/VW)
R. Fleischhacker (ACEA/Porsche)
T. Kinsky (ACEA/Opel)
A. Sipido (ACEA/Ford)
C. Hess (ACEA/Audi)
N. Lubbe (ACEA/Toyota Europe)
Y. Takahashi (JAMA/HONDA)
K. Wolff (Continental)
D. Martin (DTS)
M. Winkler (MESSRING)
E. Seemann and P. Gay (Cellbond)

4. Opening for DAY 2: Welcome and Self introduction

- The Chairperson expressed his appreciation to the participants as well as to BASt, which

provided the conference room.

- Members introduced themselves.

5. Finalization: Draft Agenda of the 9th Flex-TEG Meeting

- TEG members: We agree to the agenda corrected on the DAY 1 (TEG-###).

6. Finalization: Draft Minutes of the 8th Flex-TEG Meeting

- There were no corrections to the minutes of the 8th Flex-TEG meeting.
- The minutes were finalized by changing the title from draft to final version (TEG-###).

7. Confirmation: Status of the Action Items

- The Chairperson reported the status of the action items.
- Mr. Hoffmann (VW): In relation to ACTION-041, the shape of the pushing surface of impactors is very important information for test laboratories. VW optimized the shape of the pushing surface within its own company by trial and error.
- Mr. Gehring (BGS): BGS has also optimized it.
- Chairperson: The shape of the pushing surface of Flex impactors used in Japan has been provided (TEG-###). I propose to standardize it based on actual examples as necessary in the future.
- TEG members: We agree.
- Mr. Kinsky (OPEL): Also, we request that FTSS standardize the catching lopes to prevent the impactor from dropping to the ground after colliding with vehicles.
- Burleigh (FTSS): We agree.
- MESSRING: In relation to ACTION-046, standardization of the measurement items for Flex into ISO is progressing without any problem. We will disseminate the latest information to TEG members as soon as we obtain it.

8. Information: Flex-GTR-prototype Technical Evaluation Test Results (ACEA, JAMA, others)

- JAMA: We reported JAMA's results of round-robin tests (TEG-###). All the round-robin tests planned by JAMA have been completed. The repeatability of flex impactors during the tests on actual vehicles was good. There is no large problem in either durability or usability.
- ACEA: We reported the present status of ACEA. Round-robin tests planned by ACEA have not yet been completed. The tests will continue to be conducted.
- Chairperson: We request that ACEA complete the round-robin tests by the next GRSP.

ACTION TEG-050

- **ACEA will complete the round-robin tests by the next GRSP.**

9. Discussion and Finalizations: Flex-GTR Specifications

- Hoffmann (VW): The outer cover of the impactor is too tight and the rubber material inside it shifts while mounting the outer cover. Do you have any resolution?
- Burleigh (FTSS): How about increasing the width of the outer cover by 15mm?
- Chairperson: I believe there is no concern of increasing the width of the outer cover by 15mm.
- TEG: We agree on increasing the outer cover width by 15mm.
- Mr. Kinsky (OPEL): There is a sharp edge in the knee section of the impactor. Has it been removed?
- Burleigh (FTSS): The sharp edge in the knee section has been removed.
- Mr. Hess (Audi): Has the newest manual for Flex been completed?
- Burleigh (FTSS): The newest manual for Flex is being prepared, and we will distribute it to you as soon as it is completed.

ACTION TEG-051

- **FTSS will complete the newest manual by the next GRSP and distribute it to TEG members.**

10. Discussions and Finalizations: Dynamic Certification Test

10.1. Dynamic Certification Test Method

- Chairperson: In the discussions on the first day, two proposals were made, i.e., (1) giving options to test laboratories and (2) combining the Inverse-type and Pendulum tests. We would like to select one of these today.
- TEG: As a result of discussions, we agree to the proposal of combining them.

10.2. Requirement Corridor

- Chairperson: On the first day, it was proposed to use BASt's method for preparing the corridor. We would like to confirm that TEG has no problem with this.
- TEG members: We agree to BASt's preparation method as there is no special problem.
- Chairperson: We would now like to collect as much experiment data as possible for preparing the corridor for dynamic calibration tests. We request cooperation of TEG members.
- TEG members: We agree.

ACTION TEG-052

- **TEG members will cooperate in the efforts to collect experiment data for preparing the corridor for dynamic calibration tests.**

11. Discussions and Finalizations: Injury Threshold Values

- Chairperson: TEG-### was proposed after discussions on the first day (DAY 1). We would like to confirm that TEG has no problem with this.
- TEG members: There is no problem.
- Chairperson: We request that ACEA and JAMA conduct technical feasibility studies on the tibia and MCL by the next GRSP so as to contribute to removing the brackets from the tentative criteria.
- ACEA and JAMA: We agree.

12. Collect Opinions: TEG Technical Comments on the DRAFT Proposal for gtr 9 amendments submitted to GRSP by Japan (GRSP-45-8 through GRSP-45-11, possible to download the documents from UN web site as below)

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/grspinf45.html

- Chairperson: At the GRSP in May 2009, Japan submitted a draft amendment of gtr9 (an informal document). Based on the result of this meeting, we will modify the draft amendment of gtr9 to make it a formal document. We request that TEG members check the preliminary formal document and comment on it.
- TEG members: We agree.

ACTION TEG-053

- **TEG members will check the preliminary formal draft amendment of gtr9 to be prepared by Japan and comment on it.**

13. Future Action Plans

- Chairperson: We would like to confirm the future action items.
  - ACEA : Round Robin Test (by next GRSP in Dec. 2009)
  - ACEA and JAMA: Technical Feasibility Study (by next GRSP in Dec. 2009)
  - JARI-FTSS: Conduct Recalibration of the tibia-3 of SN03 by mid October at the latest (by middle Oct. 2009)
  - All: Increase the test data of Calibration Test Method for Inverse and Pendulum (by next GRSP in Dec. 2009)
  - FTSS: Update User Manual of Flex-GTR and circulate the manual to the TEG members (ASAP)
  - Chair & Secretariat: Make Draft Final Report on the Flex-TEG Work (by next GRSP in Dec. 2009)
- TEG members: We agree on to the above action plans. Additionally, we also request to have the 10th TEG meeting to summarize the above results before the next GRSP meeting.
- Chairperson: I will take the question of whether to have the meeting or not back home for consultation with the Ministry of Land, Infrastructure and Transport of Japan (J-MLIT).

ACTION TEG-054

- **The Chairperson will decide whether to have the meeting or not after**

consultation with the Ministry of Land, Infrastructure and Transport of Japan (J-MLIT).

14. Status report for the 46th GRSP Meeting (Dec. 2009)

- Chairperson: After this meeting, we will prepare the status report (draft) to submit to the 46th GRSP and request that TEG members review it.
- TEG members: We agree.

ACTION TEG-055

- **The Chairperson will prepare the status report (draft) to submit to the 46th GRSP, and TEG members will review it.**

15. AOB

- Mr. Gay (Cellbond): Will the draft amendment of gtr9 contain detailed specifications such as drawings for the flexible impactor?
- Chairperson: The current gtr9 contains no drawings of impactor headforms or legforms. Gtr9 contains only the required general specifications/performances for impactors, and the flexible legform impactor will follow the same practice.

16. Closing

- The Chairperson expressed his appreciation again to the participants as well as to BASt, which provided the conference room.

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