

Finalized Minutes
(Only Title was changed as Finalized)
11th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting
Date: 21st April 2010 (10:30 – 17:00)
Place: ACEA offices in Brussels, Brussels, Belgium

Attendants

Present:

- T. Kinsky (ACEA/GM Europe)**
- B. Bünger (ACEA/GM Europe)**
- N. Lubbe (ACEA/Toyota Motors Europe)**
- A. Sipido (ACEA/Ford)**
- R. Fleischhacker (ACEA/Porsche)**
- A. Pott (ACEA/Hyundai)**
- O. Zander (BAST)**
- D. U. Gehring (BGS)**
- F. Travert (PSA/ACEA)**

By Phone/internet:

- A. Konosu (Chairperson/J-MLIT/JARI)**
- Y. Takahashi (JAMA/Honda)**
- I. Imaizumi (JAMA/Honda)**
- A. Otubushin (ACEA/BMW)**
- O. Ries (ACEA/VW)**
- C. Rösch (Cellbond)**
- M. Burleigh (FTSS)**
- F. Minne (UTAC)**
- C. Hess (ACEA/Audi)**
- R. Cicloni (ACEA)**
- D. Martin (DTS)**

1. Opening: Welcome and Self introduction

- The Chairman expressed his appreciation to the participants as well as to ACEA, who provided their conference room as well as phone/internet conference system.
- Half of the participants were not able to come to the ACEA office due to the ash of Island volcano.
- Members made self introductions.

2. Finalization: Draft Agenda of the 11th Flex-TEG Meeting

- The draft agenda for the 11th TEG meeting (TEG-125) was discussed.
- The draft agenda was finalized with several modifications described in red (TEG-125-Rev. 1).

3. Finalization: Draft Minutes of the 10th Flex-TEG Meeting

- The draft minutes of the 9th TEG meeting (TEG-124) were discussed.
- The draft minutes were agreed without any modifications, and then finalized by changing its title from "Draft" to "Finalized" (TEG-124-Rev.1).

4. Confirmation: Status of the Action Items

- The status of action items was confirmed (TEG-126). Summary is as follows,
 - Action item 51 – Latest Flex-PLI draft Manual will be sent for review to BAST and JARI next week from FTSS.
 - Action item 56 – SN02 is currently used in ACEA for further testing. Porsche has finished additional tests. Technical feasibility is still not completely assessed. No critical problems encountered with the leg.
 - Action item 57 – BAST-ACEA will discuss the necessity of a relaxation zone for the tibia in this meeting.
 - Action item 58 – 11th TEG meeting was set base on the ACEA request – action closed
 - Action item 59 – Summary report of 10th TEG meeting was prepared - action closed
 - Action item 60 – "Data of background discussions at the 9th TEG meeting concerning injury criteria and calibration tests" report (TEG-127) was finalized - action closed
 - Action item 61 – Required Information for the pendulum-type dynamic calibration test was included in the gtr9 amendments - action closed.

5. Information: Flex-GTR-prototype Technical Evaluation Test Results

5.1. ACEA

- No new information on physical tests is available.
- ACEA stated that no need to change the physical impactor.
- A presentation from ACEA was given to illustrate concerns about measurements during the

rebound phase as the impactor is not biofidelic for rebound behavior. (TEG-128)

- The chairman agreed that the rebound phase data should not be used for evaluation.
- After some discussion, it was agreed that ACEA/BGS will prepare and distribute a suggestion for a definition of the rebound phase within two weeks.

ACTION-062

ACEA/BGS will prepare and distribute a suggestion for a definition of the rebound phase within two weeks.

5.2. Others

- None.

6. Finalizations: Injury Threshold Values

- At first, ACEA presented their comments using a document distributed in advance (TEG-129).
- ACEA recommendations are:
 - An ACL requirement can not be supported by ACEA
 - A relaxation zone for tibia bending moment should be set at 380Nm

6.1. Tibia Relaxation Zone

- BAST commented that a relaxation zone for Flex-PLI is not needed. Impactor characteristics and measurement items are different, therefore, the relaxation zone for the EEVC WG17 impactor shall not be introduced to the Flex-PLI automatically.
- ACEA commented that the relaxation zone is independent from the test tool. To cope with future vehicle development a relaxation zone is needed.
- JAMA stated that their tests so far did not show the need for a relaxation zone. Therefore, JAMA does not actively ask for a relaxation zone. However, the need for ACEA is recognised, and the requested value is not too high only 10% more than that of the normal zone. JAMA therefore can support ACEA position.

6.2. ACL Requirement

- ACEA proposed to abstain from an ACL threshold in the gtr 9 but to monitor ACL in ECE regulation against 13mm for 5 years. After this time period, the monitoring value will be mandatory based either on the monitoring value or on new discussions.
- BAST commented (TEG-130) that limited scientific data is available. There should be a mandatory threshold, ACL shall not exceed 13mm, in the gtr 9 at least after a certain time period. BAST could not support the ACEA proposal.
- JAMA stated that the priority of ACL injury is low because the ratio of isolated ACL damage in the real-world accident is significant low, less than 3%. However, the German government need of having an ACL criterion which is related to the shear displacement criterion of current gtr9 is understandable from the point of view of governmental needs. The value of 13mm for ACL lacks enough scientific data; however this value is technically feasible for JAMA. Therefore, JAMA can accept the BAST proposal.

6.3. Additional meeting only for Tibia Relaxation Zone and ACL Requirements

(26 April 2010)

- TEG members had brought back the 6.1 and 6.2 discussion results to each organization, and then tried to make a compromised agreement on the tibia relaxation zone and ACL requirements.
- After discussions, finally, TEG made their agreement on this matter (see TEG-131)
- TEG will submit the agreement to the GRSP and then observe GRSP opinions.

7. Catch rope proposal, 400Nm Loading and CAE status (FTSS)

- FTSS proposed a design for a catch rope attachment to avoid ground contact of Flex-PLI after the car impact test (TEG-132). It will be optional parts of Flex-PLI. Additionally, shim thickness options of the Flex-PLI (inside of tibia and femur) will be 0.1 or 0.2 mm in addition to 0.05 (TEG-132). These were agreed by TEG without any objections because of very minor items.
- FTSS informed about 400 Nm bending test results with regard to the bone cores of Flex-PLI (TEG-133). The test results did not show any concerns. FTSS are going to install the bone

cores into the Flex-PLI tibia/femur, and then they will confirm no concerns for the 400 Nm bending test at assembly level and will find out best setting of the bending stopper cable start timing at 400 Nm (for tibia relaxation zone).

- FTSS informed about their CAE model development (TEG-134). ACEA requested to enhance their model to achieve good correlation under car impact situation. Chairperson requested FTSS to share more detailed information with TEG members if possible.

ACTION-063

FTSS will continue 400 Nm loading test to confirm no concerns for the 400 Nm bending test at assembly level and will find out best setting of the bending stopper cable start timing at 400 Nm (for tibia relaxation zone)..

ACTION-064

FTSS will continue to enhance their CAE model validation/update under car impact test level.

8. Minor Updates: Proposal for amendments to global technical regulation No. 9 (ECE/TRANS/WP.29/GRSP/2010/2)

8.1. Corrigendum: Knee measurement locations

- The Chairman informed about a correction of the knee measurement location (TEG-135). It is a correction of numbers or letters, no modification to the impactor. The corrigendum was agreed by TEG.

8.2. Others

- None

9. Future Action Plans

- The Chairman confirmed following future action plans.

- ACEA-BGS: Make a proposal how to cut the rebound phase test data within two weeks (by 5th May 2010).
- FTSS: Continue 400 Nm loading test to confirm no concerns for the 400 Nm bending test at assembly level and find out best setting of the bending stopper cable start timing at 400 Nm (for tibia relaxation zone).
- ACEA: Continue the technical feasibility study.
- FTSS: Continue to enhance their CAE model validation/update under car impact test level.
- Japan: Japan are going to submit an informal document with regard to corrigendum on the ECE/TRANS/WP.29/GRSP/2010/2 based on the 11th Flex-TEG meeting results (to 47th GRSP meeting).

ACTION-065

- ACEA will continue the technical feasibility study.

ACTION-066

- Japan are going to submit an informal document with regard to corrigendum on the ECE/TRANS/WP.29/GRSP/2010/2 based on the 11th Flex-TEG meeting results (to 47th GRSP meeting).

10. Status report for the 47th GRSP Meeting (May. 2010)

- The Chairman stated, "I will prepare the Status Report for TEG after the TEG meeting, so I request TEG members to review it."
- The TEG members agreed.

ACTION-067

- The Chairman will prepare a Status Report for TEG after the 11th TEG meeting and will distribute it to TEG members for finalization.

11. AOB

- There was a discussion whether the TEG will continue. The chairperson stated that the TEG

technical discussions are basically finished and a gtr9 amendment draft has been submitted to the GRSP. He believes the remaining issues are not directly related to the technical discussion items (relatively political discussion items). It would be a Japanese government decision to continue TEG or not.

12. Closing

- The Chairman again expressed his appreciation to the participants as well as to ACEA, who provided their conference room as well as phone/internet conference system.
- In addition, the Chairman commented that the particulars of the next TEG meeting are undecided and that notification will be given separately if it is needed to be held.

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| TEG-124 | DRAFT Minutes 10th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting |
| TEG-124-Rev.1 | Finalized Minutes 10th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting |
| TEG-125 | Draft Agenda 11th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting |
| TEG-125-Rev.1 | Finalized Agenda 11th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting |
| TEG-126 | Status Report on Action Items at 11th Flex-TEG meeting |
| TEG-127 | Technical Background Information Document for the UN-ECE GRSP explaining the Derivation of Threshold Values and Impactor Certification methods for the FlexPLI version GTR agreed by the FlexPLI-TEG at their 9th Meeting |
| TEG-128 | ACEA; Injury values : impact vs rebound |
| TEG-129 | ACEA Comments |
| TEG-130 | BASt; Flex-GTR: Proposal for ACL/PCL injury threshold |
| TEG-131 | TEG Agreement on the Tibia and ACL Issues (Finalized) |
| TEG-132 | FTSS; Flex PLI Catch Rope and Bracket Proposal |
| TEG-133 | FTSS; 400 Nm Tibia Gage Loading Results |
| TEG-134 | FTSS; FLEX PLI GTR Model development status |
| TEG-135 | JARI; Corrigendum for the Knee Measurements Locations |
| TEG-136 | DRAFT Minutes |

11th Flex-PLI Technical Evaluation Group (Flex-TEG) Meeting
