

<u>Minutes</u>	
<u>1st meeting</u>	
<u>Task Force regarding Review and Update Certification Corridor (TF-RUCC) under the IG GTR9-PH2</u>	
Venue	Web meeting
Date	27 Jan. 2012, 12.00-13:40 (CET)
Status: Finalized	

Present:

- Atsuhiko Konosu, JARI (Japan) Chairman
- Mark Burleigh, Humanetics (UK) Secretary
- Yukou Takahashi, Honda R&D (Japan)
- Iwao Imaizumi, Honda R&D (Japan)
- Sukhi Bilku, Chrysler (USA)
- Casten Hohmann, Volkswagen (Germany)
- [Yoshihisa Tsuburai](#), JASIC (Japan)
- Thomas Kinsky, GM Europe/Opel (Germany)
- Jan-Christopher Kolb, Bertrandt (Germany)
- Jan Wilsmann, Bertrandt (Germany)
- Steve Pingston, GM (USA)
- Oskar Ries, Volkswagen (Germany)
- Oliver Zander, BAST (Germany)
- Dirk-Uwe Gehring, BGS (Germany)
- Peter Lessmann BGS (Germany)
- Michelle Chaka, Ford (USA)
- Mike Beebe, Humanetics (USA)
- Kurt Bambach, Humanetics (USA)
- Len Banfant, Humanetics (USA)
- Roderick Vershult, Humanetics (Germany)
- Abayomi Otubushin, ACEA BMW (Germany)
- Philippe Wenicke, BMW (Germany)

1. Welcome

- Dr Konosu welcome everyone to the meeting

2. Self introductions

- Self introductions were done.

3. Objectives of 1st TF-RUCC meeting.

- Chairperson stated objectives of the 1st TF-RUCC meeting as follows:
 - Review current situation.
 - Decide how to make progress of this TF-RUCC activity
 - Develop working plan with time schedule.
- TF members agreed on that.

4. Adoption of the Draft Minutes for TF-RUCC Kickoff meeting (TF-RUCC-K-02-Draft).

- Draft minutes (TF-RUCC-K-02-Draft) were finalized without any modifications (TF-RUCC-K-02-Final).

5. Humanetics Presentations (TF-RUCC-1-03-Rev.1)

- M Burleigh and K Bambach presented a revision of TF-RUCC-1-03 (TF-RUCC-1-03-Rev.1) to inform their findings as well as their proposals.
- Slide 4: It was confirmed that inverse corridors were set with the shorter rubber flesh. BGS and BAsT insisted that due to the results shown with the longer flesh that the inverse test was more sensitive to leg changes than the pendulum. [The inverse test provides more degrees of freedom than the pendulum test because the impactor is completely released during the impact, while the impactor movement is limited due to its fixations at two positions during the pendulum test.](#)
- Slides 5 & 6: There were a number of comments regarding the short rubber flesh data. [BAsT requested the test results, the impactors that have been used, the check up procedure etc.](#) K Bambach is to send out a spread sheet to explain calculations. Inverse values were low and Humanetics will rerun these tests with closer values to the corridors. Chairperson recommended to Humanetics that to review and update Humanetics inverse test rig because quite low data is very strange. It has a chance that a test rig problem.
- Slide 7: Humanetics proposed the use of PE sheet to calibrate component sub assemblies as this setup proved to be more stable and repeatable; BAsT/BGS would prefer gap condition roller set up as it is more sensitive. M Burleigh stated the setup is very difficult and open to inconsistent results. The fixture has been seen to slide on the top of the roller carriages and rollers can slide rather than roll even when a gap condition is present. The nature of the rollers is very unstable which is why there are

stop plates around the rollers. The high movement of the carriage adds to this instability. The gage sensitivity is still calculated on rollers as the lower travel makes this test more stable than the assembly. Chairperson supported Humanetics proposal to use PE sheet to calibrate component sub assemblies because roller set up is significantly not user-friendly and difficult to handle that to obtain appropriate test data.

- Slide 8: BAST and BGS stated the "no gap" test being an unusual calibration setup because it causes unintended friction.
- Slide 10: BAST and BGS confirmed this being the usual test setup for e.g. the calibration of load cells.
- Slide 11: The conclusion is logical because, as stated by BGS and BAST, the "no gap" test setup causes unintended friction.
- Slide 14: BGS and BAST gave an explanation for the observations made during the tests within TF-RUCC-1-05-Rev1: The "with gap" test setup is more sensitive and thus avoids unintended friction, provides a higher degree of freedom, a higher influence on the long bone properties, higher values and a better assessment. Therefore, the higher repeatability of the "PE test" results should not be used as an argument for choosing this type of test, but just the other way round the PE test and the "no gap" test are considered to not being sensitive enough. Therefore, it is again proposed to use the "with gap" test as a calibration test.
- Slide 15: Subsequent to the previous comments made, BAST and BGS requested this comparison using the "with gap" method.
- Slide 20- Slide21: There was concern over the removal of the outliners for sensitivity calculation on batch 3 and 4 bones. Humanetics had left in the calculation with outliners as that had been previously shown in the earlier presentation (TF-RUCC-1-03) and to help explain the change they were left in. The justification to remove the outliners was; normally bones are flexed 4 times before running the test, in these two cases (by mistake) they were not.
- Slide 22: Humanetics stated existing legs would be used for the round robin set up. These legs will have new bones, meniscus, knee springs, bone interfaces, knee cables, bone cables, flesh system and rubber segment buffers. All other parts will be assessed for wear/damage and replaced as needed. It was not possible to supply new legs. It was confirmed that any production legs being made in the assessment time period would have 5 pendulum and 5 inverse tests to add to the data. BAST repeated their concerns that again no brand-new legforms being used to possibly establish shifted or modified corridors, if needed.
- Slide 23: J C Kolb confirmed Bertrandt are prepared to run round robin assessment and

M Chaka from Ford also offered their services for round robin. O Zander requested that before any round robin testing they need to test two legs to the latest build level to check repeatability and reproducibility as discussed in the IG meeting in Geneva, then round robin should go ahead if results prove satisfactory. Kurt Bambach offered to send Humanetics data showing repeatability on dynamic testing. [BAsT wondered why the pendulum test being less documented than the inverse test and requested an identical documentation, where applicable.](#)

- Slide 24: It was stated that Humanetics would recalibrate the string pots before the round robin to ensure they were to specification. D Gerhring asked if this was necessary. The pots should be calibrated annually anyway and it would be prudent to do this before testing.

6. Japan Presentation (TF-RUCC-1-04)

- A Konosu/chairperson presented TF-RUCC-1-04 to introduce Japan observations as well as Japan proposals. Proposal was to re-examine all the GTR corridors by preparing bones that are in the middle of the bone corridor to avoid going back to discussion on injury thresholds. Japan proposed to carry out this testing at JARI because JARI has the original test rigs which were used to make static and pendulum corridors.
- Different results were obtained with bone core between JARI and Humanetics. M Burleigh requested the JARI bone fixture to set up the round robin bones and look to see if it was the fixture or the test set up that was the problem.
- JARI propose the use of the PE sheet as opposed to the rollers as it is more stable, repeatable and easier to control.
- [BAsT again opposed that a high repeatability in that context should not alone decide on whether to use the PE sheet test setup because the repeatability is due to unintended friction.](#)
- Dr Ries confirmed the importance of a stable consistent build, M Burleigh said this proposed procedure from the bone core up should ensure this.

7. BAsT/BGS Presentation (TF-RUCC-1-05-Rev.1)

- O Zander showed comments to slides 22 and 23 of the Humanetics presentation. He strongly recommended that SN02 was not used in the round robin as it was the only leg left of the original three prototypes and would be the only reference to the original testing. Besides, the leg has seen many tests and has some damage. It was agreed not to use SN02 in the round robin and it is to be left untouched unless there is a request for repair from the owner JAMA.

8. Discussions

- Japan proposal is to use bones in middle of the static corridors and build 3 legs. Besides, tentative results from these legs if completed in time will be presented to the TF before the next IG meeting in late March to show progress to the informal group.
- This Japan proposal was agreed in principle. Some members were to confer with their colleges on this proposal.
- BAST is to be kept up to date with progress. The three legs were to be shipped to BAST after JARI testing.

Future Action Plans

- JARI will send bone fixture to Humanetics
- Humanetics will prepare bones with JARI fixture and look at why there is difference between JARI and Humanetics fixture.
- Humanetics will prepare min 6 sets of bones for JARI selection, return JARI bone fixture, prepare 3 knee assemblies and send parts for 3 tibia and femurs assemblies.
- JARI will test retest bones for comparison with Humanetics and Build bone assemblies for static assessment on plastic sheet. Knees will be retested and legs will be assembled for 5 pendulum and inverse tests. Results are to be presented in next TF meeting.

9. Next meeting

- 19 March webex meeting if we can obtain Japan test data as well as proposals by that timing.

10. A. O. B.

- T Kinsky asked if SN02 had revised bones as stated in doc GTR9-1-10 Flex change list. M Burliegh confirm this was a mistake, SN02 still has original prototype Polyester bones.

Document Lists

Document number	Submitted by	Document name
TF-RUCC-1-01-Draft	Chair	Draft_Agenda_120127
TF-RUCC-1-01-Finalized	Chair	Finalized_Agenda_120127
TF-RUCC-1-02-Draft	Chair/Secretariat	Draft_minutes_120309
TF-RUCC-1-03	Humanetics	Humanetics presentation
TF-RUCC-1-03-Rev.1	Humanetics	Revised Humanetics presentation
TF-RUCC-1-04	Chair	Japan Observations and Proposals 120126 Final-BK

TF-RUCC-1-02-Finalized

TF-RUCC-1-05	BASt/BGS	BASt BGS Comments on TF-RUCC-K-03
TF-RUCC-1-05-Rev.1	BASt/BGS	Revised BASt BGS Comments on TF-RUCC-K-03
TF-RUCC-1-06	Chair	Information Roller Support System 120127
TF-RUCC-1-07	Chair	Roller-System-Movement_120127