28 April 2005

UN ECE GRPE Informal WG NRMM Meeting
Minutes of the meeting at EC DG-JRC Ispra, Italy, 12th to 13th April 2005

Objective of the meeting:

During the Ann Arbor meeting[1] in September 2004 and the January 2005 San Antonio meeting the discussion of the comparison document was successfully completed. Only some issues remain for further discussion. The Ispra April 2005 meeting serves to discuss these remaining items and to start the elaboration of the future structure of the GTR document.

Structure of meeting:

The meeting was structured into three major parts:

1. Presentation by the different experts updating the experts on current developments
2. Discussion of open issues
3. Discussion of GTR structure

Approval of minutes of San Antonio Meeting January 2005.
Adoption of agenda (enclosure1).
List of participants (enclosure2).

Presentation by the different experts in order to update on current developments

1. The progress of work in the last half year was acknowledged by all present experts. Especially, it was emphasized by the involved legislative bodies that the development of a simple and harmonised test protocol leading indeed to a global harmonisation of the NRMM technical regulation is of very high priority to their respective organisation. DG ENTR and Industry were represented by Ms Maria Spiliopoulou and Mr Mats Ericsson.

2. Confirming the importance of the comparison report and its function as reference it was agreed to try to resolve all issues in 2005 and plan the drafting of the GTR in 2006.

[1] Based on the extensive comparison document prepared by DG-JRC the meeting aimed at discussing all the identified differences between the EU Directive (97/68/EC as amended), ISO Standard (ISO 8178 series), CFR Part 1065 and Japanese input and develop solutions to overcome the open points in view of the future Global Technical Regulation (GTR) for engines intended to be installed on NRMM.

3. The formal proposal for the development of an NRMM GTR by EC to AC.3 was introduced to AC.3 as informal document in March 2005 and it will be presented as official document to the June 2005 AC.3 meeting[2].

4. At the 49th GRPE Geneva meeting Mr Gauvin presented a thinking paper on the adoption of emission GTR's. His paper regards the question of limits within an emission GTR. He evaluates a number of solutions to the problem of inclusion of limits into GTR. One of the solutions foresees *to adopt in AC.3 a gtr with limit values "to be determined later". This option, if legally possible, seems to be the best:*

- *it freezes the technical discussion in GRPE;*
- *it entices the contracting parties to introduce the new technical procedure within their national system, and so to gather information on possible new limit values.*

AC.3 approved this approach for now for the WMTC and the WHDC. [3]

5. Akihiro Nakamura (enclosure 3) made a very interesting presentation of the foreseen development and their implication for the Japanese legislative situation regarding non-road machinery. The non road transient cycle (as introduced in European and US regulation) will be introduced, if the transient test cycle is required for the future regulation of the special motor vehicles.

6. Cleophas Jackson updated the present experts on the development of the US non road legislation. (Enclosure 4). He stated that the final version of Part 1065 should be published in June 2005. He explained the work in preparation regarding constant speed machinery and the cold starting issue. The collection of data will take place during 2005. He asks to have comments on the selection of machinery.

7. Shirish Shimpi reported on the ongoing CRC E-66 research activity. Since the last meeting in January in San Antonio phase 1 has been completed. Shirish presented the planned timeline for phase 2 and he welcomed the support by ISO and NRMM WG to the planning and the experimental tests of partial flow systems at SwRI. He stated that he will send the experimental plan to the NRMM members for comments. JRC pointed out that the acceptance of the partial-flow system represents a major difference between the US approach and that of the other countries; the coordinators of the NRMM WG offered their advise in the definition and at any time during the tests to be carried out by SwRI. The use of a Carbon Denuder for volatile particulate removal upstream of the filter has been abandoned due to highly variable separation characteristics. There was an extensive evaluation of PM sampling related issues, such as filter media, filter face velocity and temperature, and filter loading. Teflone membrane filters showed the least artefact formation compared to other filter media. Other effects are not yet fully understood. For example a high PM mass variability was found at higher dilution ratio and low filter loading. Shirish Shimpi stated that a number of open points should be answered in the next few weeks. It was mentioned that a request for alternative procedure has been submitted to EPA regarding a partial flow dilution system at about the 0.05 g/bhp-hr level. In future this should be done also for the particulate level as foreseen by 2007.

8. Leif-Erik Schulte reported on the work done at RWTUEV in the framework of the WHDC validation (enclosure 5). The extensive study with different engines and covering a broad range of PM levels from 0.005 to 0.3 g/kWh proved the quality of partial flow systems over the whole set of steady and transient cycles investigated (WHTC, WHSC, ESC, ETC, FTP

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[2] For more information on 1998 agreement and the procedures see:
http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29glob/tran132.pdf ,
http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29pub/wp29pub2002e.pdf

[3] Please see #20,42,73 in http://www.unece.org/trans/doc/2005/wp29/TRANS-WP29-1039e.doc

J13). The used system was an improved version of the AVL Smart Sampler. Even though this system was operated in the look ahead mode the response time of the new models is lower than 0.3 s. Dr Knuth mentioned correlation tests performed at Deutz between CVS and a NOVA system with results comparable to the Smart Sampler. Dr. Knuth offered to provide that data to the workgroup. Mr Stein presented results from different labs of the WHDC work program that were used to support the introduction of the partial flow systems in conjunction with the ETC into the amendment of the new Euro 4 On-road HD directive (enclosure 6).

9. R. Hummel emphasised the target and the timeline for the NRMM GTR.

Discussion of open issues following the updated open issue list:

"The topic by topic discussion including the comments from USEPA, Japan, EC and ISO was very productive and the review of issues in the document was completed in the three days of technical work. Many of the topics where differences were found were resolved identifying the approach to be taken for the drafting of the GTR document. All the results are documented in additional columns in the reference document, which remains the central reference document.

A number of topics could not be resolved. In order to accelerate the work during 2005 these open items are collected into a working table which ordered by items defines the tasks and responsible (and deadline) to investigate specific questions and report on them. After distribution of the new documents, conference calls are planned from March 2005 onwards to resolve the issues in discussions between the experts. It is hoped that a number of items can be resolved in the April meeting." [Minutes of the meeting at SwRI, San Antonio ,19th to 21st January 2005].

During the Ispra meeting this working table was discussed issue by issue. The different indicated experts presented their proposals. Some issues were solved. A number of issues still await the final version of part 1065 in June 2005. By end of May 2005 the updated working table will be distributed to the experts.

Discussion of future structure of GTR:

Given the important progress made regarding the remaining open issues, Giorgio Cornetti presented a document to start the discussion on the structure of the draft GTR for NRMM within the working group (enclosure 7). The presentation was acknowledged as an important step to initialise the discussion on the priority issue of a possible future structure, used for drafting the GTR. The presentation was followed by a vivid and also partially controversial discussion. It is clear that a lot of work has to be done during this harmonisation effort also regarding the structure of the document. It has been decided to work on this issue during summer including small meetings and conference calls in order to arrive at a full discussion in September 2005.

Hans-Jürgen Stein stated that the structure, as presented by G. Cornetti, does not follow the structures of WHDC and WMTC, which in principal would be desirable. Giorgio Cornetti showed the UNECE WP.29 GTR format document 883[4], which he had used for the proposed structure.
Dr. Knuth expressed concern about the calculation approach. Giorgio Cornetti pointed out that the structure foresees the parallel calculation using molar and mass based units, as decided in Ann Arbor in September 2004.
Shirish Shimpi emphasised that harmonisation should always consider all developments and technological advances. Cleophas Jackson informed the WG that CFR Part 1065 represents a very modern document. Mr. Stein acknowledged the substantial progress made with Part 1065, but indicated the major difference between Part 1065 and the planned GTR. He continued, that while Part 1065 is a measurement regulation, the GTR covers much more, such as the certification procedure and the test cycles. He asked, that this should be taken into account when deciding on the structure. Arthur Stark expressed his opinion that the structure should represent an uniform approach for Europe. Mr Asano stressed that it is important to have at the end of this process one consistent document.

In order to push the advance of this discussion all experts are kindly asked to comment in writing on the structure proposal (enclosure 7) before the 30th of June, 2005.

Next meetings:

The future schedule of the working group is scheduled as follows:

1) The NRMM WG meeting in the frame of the 50th GRPE meeting will be held in Geneva on the 1st of June 2005 (9H30 to 12H30).

2) The meeting afterwards is foreseen for the 29 and 30th of September 2005 in USA at US EPA in Ann Arbor. As the meeting had originally been foreseen for the 26 and 27th of September we would like an urgent confirmation by all experts that this shift of date is acceptable. We would also like to thank Malcolm McHattie and Josephine O'Caroll for the welcoming invitation of the NRMM WG to Ottawa in Canada. Due to a number of reasons this will not be possible this time but we hope that it is possible in a future meeting.

ENCLOSURES LIST:
1: Adopted agenda
2: List of participants
3: Presentation by Nakamura, MoE Japan
4: Presentation by Cleophas Jackson US EPA
5: Presentation by Leif-Erik Schulte
6: Presentation HJ Stein
7: Proposal of draft structure

[4] GTR format document 883: http://www.unece.org/trans/main/wp29/wp29wgs/wp29gen/wp29fdoc/800/TRANS-WP29-883e.doc