

Minutes of the NRMM meeting in Ann Arbor on 12 September 2003

1. **Introduction** and welcome by Cle Jackson. Round table to introduce participants.
2. The **proposed agenda** has been approved, with the only change to introduce and update of EURO V for LD vehicles and EURO VI for HD engines based on the workshop held in Ispra on 4 September 2003.
3. Giorgio Billi reported on the presentations given at the **46th GRPE on 22 May 2003 meeting**.
4. Giorgio Cornetti gave a detailed presentation (Enclosure 1) about the **results of the Ispra kick-off meeting** on 16/05/2003 and the subsequent actions:
 - The meeting served to inform all participants of the different legislative approaches, of the work done so far in the field of testing of NRMM and the possible contributions by non-governmental organisations and industries.
 - The mandate of the group was amended (underlined part) “to pursue the development of a globally recognised protocol and duty cycles for steady-state and transient testing for engines intended to be used in NRMM”.
 - It was proposed the future activities should be based on:
 - o the EPA NPRM released on 15 April 2003,
 - o the European proposed directive COM 765,
 - o the related ISO standards (ISO 8178-1 and 8178-11).
 - It was also suggested to take as a reference the structure of the WHDC GTR.
 - The main decision of the kick-off meeting was to build up a table of relevant items of the test protocol by the end of June 2003.

Because of not enthusiastic reception of the proposed relevant topic table and EMA’s concerns (Enclosure 1), a consultation started from EC JRC with US EPA last July and with Japanese MOE last August.

5. As a result of the July and August consultations, **a proposal concerning the comparison of different regulations** was circulated at the end of August. The main features of the proposal (Enclosure 2) were illustrated by Cle Jackson.

The scope of the future work is to derive a test procedure which is as simple as possible but still covers all aspects concerning the NRMM engine tests and meeting the overall requirements of a good methodology such as repeatability, etc.

The tool to achieve this goal is to compare the various test procedures at worldwide level (US, Japan, EU) allowing the work to be used for other test protocols under GRPE mandate.

To make such a comparison a **base procedure** shall be selected which should be the most complete one for number of topics and advanced methodology necessary to account very stringent emission standards. The test procedure, able to fulfil these requirements, is the on-highway US EPA 2007 (Part 1065) that should be integrated for the specific parts, e.g.: the steady-state and transient cycles of NRMM engines, by the ad-hoc US test procedure.

The **base-procedure** represents an **ordered list of subjects** (topics, sub-topics, characteristics) that has **to be followed methodically subject by subject**. The description of each subject of the base-procedure is compared with what described for the corresponding subject by other regulations: Europe, Japan and ISO. Of course, subjects of other regulations, which are not described in the base-procedure (e.g.: part-flow dilution), shall also be considered.

As a result of the comparison:

- Subject approached in the same way by the various test procedures has to be in principle accepted, provided that verifies the general frame of the GTR and its simplicity, repeatability and cost effectiveness requirements.
- The controversial points existing among the various procedures will be clarified, where possible, by a theoretical approach (via mathematics or statistics) and by ad hoc testing, where needed.

Comparison tables were distributed during the meeting (Enclosure 3).

With reference to the presentation, the following comments were recorded:

- Shirish Shimpi pointed out that the EPA procedure 1065 is not yet completed, but the work should be finished by the end of 2003.
- Eddy Tarling expressed that CEMA supports the whole work.
- Mitsuo Shikata: Japanese rules do not include presently a transient test cycle but only steady state.
- Shirish Shimpi and Giorgio Cornetti confirm that a later contribution by Japan on the transient test cycle is not an obstacle to the present activity.
- Jürgen Stein commented that formal issues are not that important, on the other hand they cannot be solved since the regulations' languages are anyway different. He assumed that generally all the technical details are about the same. He rather considers relevant for this group the activities of the PMP group which has an influence both on the heavy duty legislation, and the light duty sector. The major technical difference for NRMM is the choice of the dilution system.
- Eddy Tarling recalls there are other issues that cause inconveniences.
NOx measurement: wet or dry
Filter: choice between single and multiple filters
Humidity: differences on the correction factors
Calibration frequencies
Family concept, particularly in Japan
- Jackson said that the sampling procedure might be the issue for later testing.

The **proposal was accepted by the group**.

Cle Jackson introduced the list of main topics considered by 1065 (Enclosure 4), it was decided to adopt all the topics with the exception of smoke meters, gasoline test fuels, for the time being, and oxygenated fuels.

6. For the **future activities** the coordinating contributors in the different developmental areas are:

- Shirish Shimpi for US and, as a consequence, for the base-procedure,
- Giorgio Cornetti for EU,
- Mitsuo Shikata for Japan,
- Jürgen Stein for ISO.

Other members of the group are encouraged to take an active part in the work and to refer to the above mentioned coordinators.

Any communication concerning the activities of the WG shall be addressed to Giorgio Cornetti and Rudolf Hummel for further relay.

Shimpi will provide by mid October the main headings and subheadings of the base procedure, having particular regard to topics that might emerge as controversial in order to allot more time for the group to discuss them and compromise. Controversial points that were spontaneously proposed by the participants are: test speed, sampling, NTE (in the laboratory), 0.1 µg balance, filter material, calibration timing, rated speed definition, humidity correction factor for NOx (Japanese regulation). Durability has also to be considered in the test protocol.

7. How to **fill in the comparison table**:

- Use the excel file attached (Enclosure 5);
- The exact reference has to be quoted close to the subject description;
- Symbols: a conversion table has to be filled in with the correspondence between symbols of the given regulation and those of the base-procedure (a mapping table will precede the comparison table);
- Use exclusively SI units (no imperial);
- Yellow highlighted areas indicate a different approach with respect to the base-procedure.

8. Timetable: The activity of the group in the **first year** of activity (from September 2003 to fall 2004) will be concentrated on the comparison table of different legislation giving the priority in the subject list to the controversial issues. In fact, as quoted in the Appendix (A), “they should be looked at very early in the process since we will require much discussion on these issues and may affect how the regulations that are in the draft stage are formulated. Part 1065 is still in the draft stage and if we can influence changes in this document to address the controversial items soon, EPA would not have to issue a technical amendment in the future.” A more detailed approach to the timetable of the controversial issues is presented in Chapter 9.

The **second year** (fall 2004 to fall 2005) will go on the comparison on how the subject are treated in the different legislations and, where needed, in tests to solve the controversial issues with final reporting to the January 2006 GRPE session.

The detailed list of the next year activity follows:

- Mid September 2003 circulation of the draft minutes of 12.9.03 meeting;
- 30 September 2003 comments and eventual additions to the draft minutes of 12.9.03 meeting;
- Mid October 2003 list of headings and subheadings circulated by S. Shimpi;
- End October circulation of the final minutes of 12.9.03 meeting;
- 11 November 2003 11:00 CET conference call to monitor the program progress;
- Monday 12 January 2004 9:30 to 12:30 GRPE NRMM WG with the presentation prepared by the chairman on the proposal agreed at the 12 September 2003 meeting in Ann Arbor;
- Friday 16 January 2004 operative meeting (if a sufficient number of participants will announce participation);
- 20 April 2004 in Ispra meeting of the informal WG to verify the progress of the work and prepare the presentation for the spring 48th session of GRPE;
- Fall 2004 meeting (date to be defined) in Ann Arbor.

9. Shirish Shimpi, Appendix (C), will try to submit the **main list of the controversial items** with issues when he submit the overall outline of the base procedure. **Others** in the workgroup should respond to Giorgio Cornetti (and Rudolf Hummel for further relay: see Chapter 6 for communication within the WG), **by e-mail, if there are other issues that they want to add.** For

the items that have been identified initially, the WG members should start discussing them over the e-mail to understand the various positions as soon as possible. The WG should try to resolve the controversial items as many of them as possible **between October 2003 and April 2004** and make a presentation at the April meeting in Ispra where the WG stand on these issues. While the WG members are debating these issues, the WG can be filling in the language in the various sections and subsections of the protocol per the plan discussed in Ann Arbor. Probably, during such a process, other items are identified that may end up on the controversial list.¹

10. Giorgio Cornetti gave 3 presentations on the update of **EURO V for LD vehicles and EURO VI for HD engines** based on the workshop held in Ispra on 4 September 2003 (Enclosure 6)

11. **Updated Japanese NRTC program** (Kenji Kamita)

12. Japanese representatives gave an overview on the **progress** of the definition of a record of **typical operation of NRMM in Japan** and the present status of legislation (Enclosures 7 and 8)

Appendix – Contribution from Shrish Shimpi to the minutes of the meeting

A. From: shirish.a.shimpi@Cummins.com
To: giorgio.billi@libero.it
Cc: cornetti@iol.it ; jackson.cleophas@epa.gov
Sent: Friday, September 19, 2003 9:38 PM
Subject: GRPE WG on NRMM

Mr. Billi,

Thank you for writing a good summary of the meeting in Ann Arbor. I have one concern about your time table. You had written that the controversial issues would be tackled in the 2nd year of the work i.e. 2004-2005. This would be done after the base comparison work. I would like the priority of the controversial issues to be changed. They should be looked at very early in the process since we will require much discussion on these issues and may affect how the regulations that are in the draft stage are formulated. Part 1065 is still in the draft stage and if we can influence changes in this document to address the controversial items soon, EPA would not have to issue a technical amendment in the future.

Please let me know your thoughts.

Shirish

B. To: shirish.a.shimpi@Cummins.com
cc: "Billi, Giorgio" <giorgio.billi@libero.it>, jackson.cleophas@epa.gov
Subject: GRPE WG on NRMM

Dear Shirish,

I thank you very much for reading carefully our minutes.

¹ From the message of Shrish Shimpi quoted in the Appendix (C): “My concern is that if we do not start the debate on the controversial items soon, while EPA and EMA are still working jointly on completing the work on Part 1065, we will miss the opportunity to bring these issues up for discussion at the joint EPA and EMA meetings. We may not have the same flexibility that we currently have in influencing Part 1065.”

As per your good suggestion, we have introduced in the minutes that the controversial items will be clearly pointed out and prioritized in the list or, better, in the index of the main topics of the test protocol.

As a consequence, I am in favour to accept your suggestion and to initiate to put on the table for discussion the controversial items with the report of the next April, that will be presented at the meeting in Ispra, and to start their examination immediately after, i.e. from May 2004. Do you agree on this line? If yes, we will introduce such a clarification in the final minutes that will be circulated by the end of September.

Have a good weekend and kindest regards.

Giorgio

C. From: shirish.a.shimpi@Cummins.com
To: Giorgio Cornetti
Cc: Billi, Giorgio ; jackson.cleophas@epa.gov
Sent: Friday, September 19, 2003 11:04 PM
Subject: GRPE WG on NRMM

Mr. Cornetti,

I am still trying to get the group to try to look at these controversial items even sooner. I can submit the main list of these items with issues when I submit the overall outline of the base procedure. I would suggest that others in the workgroup respond to you by e-mail if there are other issues that they want to add. For the items that we have identified initially, we should start discussing them over the e-mail to understand the various positions as soon as possible. I don't think that we can afford to wait until April or May. We can try to resolve as many of them as possible between now and April and make a presentation at the April meeting in Ispra where we stand on these issues. While we are debating these issues, we can be filling in the language in the various sections and subsections of the protocol per the plan discussed in Ann Arbor. We will probably identify other items that may end up on the controversial list.

My concern is that if we do not start the debate on the controversial items soon, while EPA and EMA are still working jointly on completing the work on Part 1065, we will miss the opportunity to bring these issues up for discussion at the joint EPA and EMA meetings. We may not have the same flexibility that we currently have in influencing Part 1065.

Please let me know what you think. Others can also voice their opinion.

Shirish

D. From: Giorgio Cornetti <cornetti@iol.it>
To: shirish.a.shimpi@Cummins.com
cc: "De Santi, Giovanni F." <giovanni.de-santi@jrc.it>, "Brangan, Brian" <brian.brangan@cec.eu.int>, "Hummel, Rudolf" <rudolf.hummel@jrc.it>, jackson.cleophas@epa.gov, "Billi, Giorgio" <giorgio.billi@libero.it>
Subject: GRPE WG on NRMM

Dear Shirish,

We will follow your suggestions.

I ask you the permission to include your mail in the September 12 meeting minutes.

We will circulate a specific request for collection of the controversial items to all other members of our WG.

Many thanks and kindest regards.

Giorgio

E. From: <shirish.a.shimpi@Cummins.com>
To: "Giorgio Cornetti" <cornetti@iol.it>

Subject: GRPE WG on NRMM

Date: Monday 22 September 2003 14.45

Mr. Cornetti,

Please include my e-mail in your minutes if it helps us set direction for the future. I will be in today until noon and will be back on Sept 26.

All the best,

Shirish

ENCLOSURES LIST (*Not part of this informal document*):

- 1: Main presentation
- 2.1: Proposal
- 2.2 Comparison work by S. Shimpi (attached to the Proposal)
- 3: Example tables on particulate sampling system (initial)
 - 3.1: Base-procedure (U.S. EPA)
 - 3.2: ISO standard
 - 3.3: EU proposal
 - 3.4: Japan
- 4: Index of part 1065
- 5: Comparison excel file
- 6: Update on EU on road activities
 - 6.1: development of EU Euro 5 and 6
 - 6.2: Euro 5 for LDV and Euro 6 for HDV
 - 6.3: CAFE
- 7: Mr. Kamita's presentation
- 8: Mr. Shikata's presentation