

## **Ninth Plenary meeting of the Working Group On Off-Cycle Emissions 11 and 12 January 2005 Geneva**

### **Meeting Minutes - January 11, 2005**

#### **Agenda Item 1**

- A. William Charmley, the Chairperson of the Off-Cycle Emissions Working Group, opened the meeting by welcoming all of the participants.
- B. The Chairperson advised that there will be some presentations made by delegations which are not reflected in the draft Agenda. The Agenda for the Ninth Plenary Meeting ("Ninth") was reviewed and approved by the membership.
- C. OICA raised a concern about a document presented to WP.29 (trans. WP/2005/23) which is to be discussed at the next WP.29 meeting in March 2005. OICA believes that this document should have been discussed at the GRPE level first before being presented to WP.29. Copies of this document were circulated and the group did not debate the validity of the OICA concern since delegates did not have a prior opportunity to review the document prior to this meeting. The representative from Germany suggested that perhaps this can be discussed at the GRPE session. The GRPE Secretary indicated that this document was sponsored by the US Government. The procedure specifies that the sponsor has to submit the proposal to WP.29. The procedure does not indicate that the proposal has to first be vetted by GRPE. The GRPE Secretary did indicate that this issue could be raised by OICA at the GRPE meeting if OICA wanted further discussion.
- D. The Chairperson advised that all of the OCE documents will be posted on the OICA website by the end of January.

#### **Agenda Item 2**

- A. The minutes of the Eighth Plenary Meeting ("Eighth") were reviewed.
- B. Canada asked for a change of verbage under Agenda Item 3, Section C. In the second to last sentence in the paragraph, Canada requested the following change:  
Original version:  
"Canada indicated that those countries that adopt the GTR **should** do their own cost analysis to support adoption of the GTR, and this would certainly be different than the cost analysis we would do as part of this working group."  
Revised version:  
Canada indicated that those countries that adopt the GTR **would generally** do their own cost analysis to support adoption of the GTR, and this would certainly be different than the cost analysis we would do as part of this working group.
- C. No other comments were received on the minutes at the meeting. The Chairperson advised that if we do not receive any further comments on the minutes in the next week they will be deemed to be finalized.

#### **Agenda Item 3**

- A. Prior to moving officially on to Agenda Item 3, a presentation was made by the Engine Manufacturers Association ("EMA") which outlines concerns EMA has with the draft GTR (OCE Informal Document #18).

Mr. Rodt of German UBA commented that the EMA material touches upon the basic points of the GTR we are developing. The group never wanted to rely just on a Statement of Compliance. In principle this GTR should provide for test conditions so that

the type approval authorities can check the compliance with the NTE requirements. As well, in-use compliance will be important, but this will require that a Portable Emission Measurement Strategy (“PEMS”) is available. Finally, time is too short to review this material and make sound comments on the options presented at this meeting of the OCE working group.

The Chairperson made some general comments on the EMA presentation. The Chairperson indicated that the presentation does discuss a number of the issues at the heart of what we want to accomplish. In the future we will have the WHDC GTR which applies to heavy-duty vehicles, but what will happen when the vehicles are not operating on cycle, but off-cycle. If off-cycle is such a broad issue, how do we tackle it with some certainty. In the past manufacturers had to show that the emission standards were met over a regulated test cycle. For off-cycle, we have to make sure that we have a good cycle to deal with this. We have to decide what the best balance is between having the new WHDC and also have manufactures be responsible for off-cycle emissions. The EMA presentation contains some good options, but there may be others.

Slide 1.

Chairperson asked what was meant by the use of the terms “evaluation criteria” and “compliance assurance”. How broadly are we to interpret these terms. Is the evaluation criteria just to show compliance with the GTR, or does it also include enforcement elements. EMA indicated that this has two elements, the lab testing as part of the type approval process, and in-use testing after the fact.

Slide 2

EMA stated that the last bullet point is to suggest ways to not have to redo testing in all regions. The Chairperson indicated that according to the 1998 Agreement a GTR cannot restrict countries from having their own enforcement program, so this GTR may not be able to do this. EMA stated that if the GTR can identify what the evaluation criteria is to minimize added cost. Canada stated that it was uncertain on the 1<sup>st</sup> bullet point and what its meaning/intention was? EMA stated that we want the GTR to make compliance requirements clear.

Slide 3

The Chairperson clarified that US EPA can ask for data/information manufacturers rely upon to make the statement of compliance. Furthermore, point a. under Regulations, the Chairperson believes that this defines a “test cycle” though it may not be a “duty cycle”. The US, when the NTE was developed, did not envision a manufacturer run in-use testing program to show compliance. EMA stated that the US program will require the in-use testing to be a compliance program and enforcement program to see if the vehicles comply post-production.

Slide 4

The Chairperson disagrees with the statement in this slide. If EMA means that the NTE does not have a defined “duty-cycle”, this is correct, but US EPA does have an NTE “test procedure”, which involves tests that have to be run to show compliance with the NTE emission standards.

Slides 5 and 6 received no initial comments

Slide 7

Mr. Rodt repeated that a compliance statement cannot be the only element to show compliance. The Chairperson asked if the EMA comments were based on the 1<sup>st</sup> draft of the GTR, because the 2<sup>nd</sup> draft of the GTR reflects some of the comments that were heard at the editorial committee meeting, recognizing that a compliance statement may

not be the only element to show compliance at the time of type approval specified in the GTR. EMA did confirm that the presentation was based on the 1<sup>st</sup> draft of the GTR.

Slide 8 received no initial comments.

Slide 9

Option 1.

The Chairperson stated that though everyone agrees that a statement of compliance alone may not be the desired method by which compliance will be demonstrated we cannot eliminate any of the options. It is hoped that by the May Plenary meeting, everyone will have had an opportunity to review the options presented by EMA, so that an informed discussion can take place on the merits of each option.

Slide 10

Option 2.

No initial comments given.

Slide 11

Option 3.

The Chairperson stated that this option appears that the development of a new set of laboratory test conditions is being advocated. Mr. Rodt stated that a fixed set of conditions means a defined set of speed and torque, which is not consistent with the principles of NTE, which specified random speed and torque points. OICA stated that manufacturers need to be able to design an engine that complies with a high probability of success, with the NTE requirements and in-use. OICA feels that Options 3 and 4 are the way to go and understands that though in-use testing is not part of the mandate of the group, it is important to develop and incorporate the definitions and the laboratory conditions so that manufacturers have a high-probability of meeting the NTE in-use.

Slides 12 and 13

Options 4 and 5.

No initial comments given.

Slide 14

Option 6

Mr. Rodt asked who is meant to be responsible for completing the in-use testing? EMA is concerned that engine manufacturers would have to do the in-use testing.

Slide 15

Option 7

No initial comments given.

Slide 16

Canada stated that the current draft of the GTR does specify all of the criteria for determining compliance. What is at issue is the certification demonstration at the time of application for certification. The Chairperson stated that we need to understand what EMA means by "evaluation criteria". EMA stated that manufacturers need a set of tests to run and know what data needs to be gathered for submission at the time of certification. Manufacturers need some objective criteria to know that we have achieved compliance. EMA will have to look at the modified draft of the GTR to see if we have started down a path to establish evaluation criteria at the time of application for certification. The Chairperson stated that an issue is who will be responsible for controlling off-cycle. If by evaluation criteria do you mean you will have a checklist and know that once it is checked off you will comply for all time with the off-cycle requirements? The concept of off-cycle is always evolving therefore a single, pre-defined test cycle will not achieve the goal of addressing off-cycle emissions. Though a

manufacturer may submit a set of data and meet the up-front checklist to achieve certification, still have to deal with the issue of in-use. The EU asked who bears this risk of meeting the emission limit in real life? In the EU, the obligation is put on the member states, thus the EU directives are intended to help member states achieve this goal. If the regulations that are established result in vehicles which cause the member states to not meet the emission limits, the issue of in-use becomes more critical.

The Chairperson indicated that the EMA presentation will be circulated to the group, so that members will have an opportunity to review the options in anticipation of the next plenary meeting. Also, EMA should review the 2<sup>nd</sup> draft of the GTR to see if some of the concerns presented in the materials are addressed or have heightened EMA concerns.

- B. The group reviewed six issues which the Editorial Committee (“EC”) had identified as requiring further input from the plenary group.

First Issue is for the plenary group to consider regional altitude requirements for NTE This topic will be discussed at the continuation of the Plenary meeting on January 12, 2005.

Second issue is Cost effectiveness. EMA stated that cost effectiveness is a big issue for manufacturers, with the extra testing that will be involved, the hardware/software requirements necessary to meet the standards and the possibility of in-use testing. The Chairperson stated that the technical representative from the US put forward this approach. If there are other approaches, the group will consider them. The group also has to determine what level of detail will have to be provided in the cost effectiveness section, because the 98 Agreement does not specify how the issue of costs is to be addressed. EMA stated again that this area has to be addressed by the group, because the cost burden applies to all manufacturers not just those manufacturers who utilize auxiliary emission control strategies.

Third issue dealt with OCE GTR interaction with WHDC and WWH-OBID GTRs. The Chairperson indicated that he will make contact with the Chairpersons of these other groups to determine where commonality can exist within the GTRs.

The fourth issue (applicability section), fifth issue (general requirements) and sixth issue (addressing the specificity required by type approval process) were not discussed in detail, but it was agreed that a significant amount of work remains.

## **Meeting Minutes - January 12, 2005**

### **Agenda Item 1**

- A. The Chairperson presented a proposed Agenda for the second half of the plenary meeting. The proposed Agenda for the second half of the Ninth meeting was reviewed and approved by the membership.

### **Agenda Item 2**

- A. OICA made a presentation on the ambient conditions of the EU. The material was derived from a report submitted to the EU by ACEA in 2002. At the time testing was completed, there were only 15 countries in the EU, so the data is based on the regional conditions of those countries only. Public data was available and was used to determine the altitude levels encountered, the temperature variations and the annual kilometers driven. The lower temperature bound was found to be 2°C and the altitude was found to be primarily below 1000 meters. The report, which was submitted to the EU Commission, is still in the discussion stage. The Chairperson asked if the “normal conditions” referred to are laboratory based conditions or something else. OICA responded that the

conditions were based on the EURO III Directive. OICA further clarified that the Commission is focusing its discussions on the temperature limits and not on the procedure used to determine those limits.

- B. OICA also presented material compiled by JAMA outlining the ambient conditions encountered in Japan. All of the data presented is official Japanese data. The majority of cities in Japan are found at altitudes below 200 meters. 90% of the population resides in areas where the altitude is below 100 meters. The total population of Japan is approximately 125 million.
- C. US EPA made a presentation on the ambient conditions in the US. The data presented was not data generated by the US EPA, but by EMA through an outside contractor. The data was obtained from 3 public sources. In comparison to EU and Japan, the 90% point for ambient air temperature in the US is around 28°C.

One of the things we need to look at is what are the appropriate bounds for off-cycle control. In the US there are two air pollution problems, particulate matter and ozone formation. Based on the data, less than 3% of VMT occurs when the ozone problems occur.

For VMT vs. Altitude, 90% of VMT is around the 500 meters. 7% to 8% is between 500 and 1500 meters and 2% to 3% is above 1500 meters.

The Chairperson asked the group to give some consideration to either having a single set of values or multiple sets of values and what are the merits of one method over another. Consideration should also be given to the ambient conditions which would apply.

OICA suggested that one option is to have a global requirement and have regional requirements, with the same procedure but then the regions would have to decide on how to meet their own regional conditions.

The Chairperson stated that perhaps for the next plenary meeting, the concept of multiple regions can be considered and if this will impose different hardware requirements, what impact will it have on costs, performance and fuel economy. If the data shows what the tradeoffs are, if minimal it may not be appropriate to have multiple methods, but if the tradeoffs are significant, we may want to give multiple methods due consideration. We also have to see how future technology may impact on the methods considered. OICA stated that with future technology we do not know what to expect. OICA stated that vehicles that are designed for use in the EU cannot be used in the US because the vehicle concepts differ and this must be taken into account when developing the methods. OICA emphasized that the ideal is to have a global engine, but it would be nice to have the ability to design to regional conditions if manufacturers choose to do so.

The Chairperson stated that we need to better understand this topic. How will an engine designed to meet the requirements in a specific part of the world, for example in Japan, differ from an engine that is designed to meet more global requirements. OICA said there could be a number of issues that arise, such as turbo overspeed issues, safety concerns etc.. OICA volunteered to put this material together to share with the group. Canada stated that the driver to have these options is cost effectiveness. This group will have to explain in the GTR why we have these options, therefore having the background information to support the options will be helpful.

### **Agenda Item 3**

- A. JASIC presented materials on Active Regeneration Technology for Diesel Particulate Filters and NOx Storage Reduction. Japan made the general comment that this topic is an issue for the certification test cycle, as this is how it is handled in the EU today, but

this will interface with the work of this group, because emissions from an active regeneration is both a test cycle issue and an in-use issue. This topic has not been addressed in WHDC. The Chairperson stated that this topic has to be addressed in either WHDC or OCE or perhaps in both GTRs.

The Chairperson asked the OCE Editorial Committee ("EC") to try to capture the concerns of the Japan when working on the draft GTR. The Chairperson also stated that we need to hear back if this will be covered in WHDC or will this be addressed in a future GTR.

Juergen Stein, Secretariat of the WHDC working group stated that this topic will be addressed in the WHDC draft. The EU on-highway Directive has addressed this topic by incorporating the regulations from the passenger car Directive on this issue, and thus will also incorporate this into the WHDC draft. The Chairperson stated that another option to consider is to incorporate the US EPA regulatory provisions regarding regeneration in the WHDC draft.

#### **Agenda Item 4**

- A. The group reviewed the Open Issues from the Editorial Committee meeting that was held in Tokyo with the view to providing the EC with additional guidance:

Item 1: Regional Ambient Temperature and Altitude Conditions. No specific advise was given to the EC. The group will review the OICA materials on this issue if it goes down a path of having regional requirements. The EC should develop language that allows for both alternatives as we move forward.

Item 2: Cost-Effectiveness. The GTR should contain a discussion of cost, since this is a defined element. The EC will look to other GTRs for guidance, though there is not much information as to how costs are to be discussed in the GTRs. Juergen Stein stated that this is still a pending issue before AC3 and thus the cost discussion has not been included in the WHDC GTR yet either. Mr. Stein also stated that he has received little information on this topic, but the ultimate conclusion may be that the GTRs do not have to include a cost/benefit analysis. The UK stated that having a discussion on costs will be very useful, especially because it is a necessary part of regulatory process in the UK. Along with the cost issue, the air quality benefits also need to be discussed. Canada stated when the different countries/regions are ready to propose adoption of the GTR as part of national regulations, they may have to do their own cost/benefit analysis as part of that regulatory process. Therefore, it may be difficult to come up with a cost/benefit analysis for this GTR because the different countries will approach this from a different perspective. Perhaps we can have a discussion on the worldwide benefit, but not on the local benefits.

Item 3: Interaction Between OCE GTR, WHDC and WWH-OBD. The Chairperson stated that there should be sections of the various GTRs that share common language. The various Chairpersons will have to discuss this to see where commonality exists, especially with such items as definitions.

Item 4: Applicability. WP.29 published a proposal that addressed vehicle classification. The OCE GTR has to be cognizant of this and thus be consistent with what is contained in this document. Do we want to include diesel and diesel-derived engines, natural gas engines etc.. UK stated that the EU directive covers both diesel and natural gas engines, thus we should look for commonality. The Chairperson stated that to-date this group's work has focused on diesel and not spark-ignition engines. Mr. Stein stated that the WHDC GTR includes both diesel and spark-ignition engines, therefore, this GTR should address both for consistency. UK suggested that the scope of this GTR should be consistent with Regulation 49.

Item 5: General Requirements. The Chairperson asked how this item is different from Item 3. Mr. Stein indicated that ECE regulations all start with a commentary on the general requirements. The Chairperson stated we will have to look at this further.

Item 6: This item addresses the issue of what level of specificity is required at the time of type approval/certification. The EC will have to discuss this, but should not draft language until the Plenary group receives more feedback from the members. The EMA presentation has to be further considered and discussed as well. At that point more specific guidance can be given to the EC to draft this section of the GTR. Canada stated that in the WWH-OBd working group, this issue has been addressed. If there are elements that do not apply to all regions, perhaps this information can be included in an Annex to the GTR. Jean-Francois Renaudin, Secretariat of WWH-OBd stated that there may be some specific requirements for certain regions, that do not have to be adopted by all parties who adopt the GTR. Therefore an Annex can include provisions that are limited to certain parties, such as contracting parties to the 58 Agreement. The Chairperson stated that group members should give some thought to this when contemplating what type of data is appropriate to be submitted at the time of type approval/certification. Do we want to include some specific limiting requirements in an Annex to the GTR?

## **Agenda Item 5**

A second draft of the GTR was circulated in the week prior to this plenary meeting, but the EC has not yet reviewed it as a group. The EC has a substantial amount of work to do on the draft GTR.

Mr. Rodt, a member of the EC, stated that there is a lot of work that needs to be done. He did have an opportunity to review the second draft of the GTR and noticed at page 11 of the second draft that there is a difference between high speed and low speed from the first draft of the GTR. He indicated that the issue of high speed and low speed may become an issue for engines that are equipped with PM filters. OICA stated that the A, B, and C speed definitions are the same. The Chairperson stated he will raise this issue with Mr. Gezelle who prepared the second draft GTR. Mr. Stein stated that the drawings contained in the draft GTR have to be amended because the A, B, and C areas are not contained in WHDC, the carve-outs have to be deleted and should show the areas where compliance is required. The Chairperson conceptually agreed with this comment and stated that the draft GTR does refer back to the US EPA regulations, and could be amended to be consistent with WHDC if that was the decision of the Plenary group.

The EC will prepare a presentation at the next plenary meeting on the status of the draft GTR.

OICA stated that the EC should use slide 2 of the EMA presentation as guidance when reviewing the draft GTR. Without guidance the draft GTR will have significant blanks in it. The Chairperson stated that EMA will have to provide some clarification on the materials presented at the next plenary meeting as without this information it was not appropriate for the EC to use the EMA presentation as guidance. Canada stated that it did not agree with the EMA statement that the draft GTR did not have specific criteria and standards. What is at issue is how much information does a manufacturer have to submit up front at the time of type approval/certification. EMA stated that the group has to review the materials presented, weight the options and their respective drawbacks. The options are not the only options available. EMA believes that as the drafting of the GTR moves forward we have to have clear evaluation criteria during the certification process and perhaps even beyond the certification process. The Chairperson stated that in the

absence of guidance on this point, the EC could come up with some options of what compliance data needs to be generated for consideration by the Plenary group.

The Chairperson stated that the GTR should also include a technical report. This group will have to see what the other working groups are doing in this respect and see if we can come up with a generic outline for a technical report to be a companion document to the GTR document. Volunteers will be needed to work on this.

## **Agenda Item 6**

The timeline for the working group was reviewed. Some further consideration will have to be given to the timeline as the group moves forward.

The editorial committee will meet on the afternoon of the 6<sup>th</sup> of April and all day on the 7<sup>th</sup> of April in Bonn Germany. Details of the meeting location will be provided as soon as they are received from our hosts.

The next plenary meeting of the Off-Cycle Working Group will be held in conjunction with the 50<sup>th</sup> meeting of GRPE at the Palais des Nations in Geneva Switzerland.

Dated this 24<sup>th</sup> day of April 2005

Joanna Vardas, Secretariat