

## **Seventh Plenary meeting of the Working Group On Off-Cycle Emissions 1 June 2004, Geneva, Switzerland**

### **Meeting Minutes**

#### **Agenda Item 1**

- A. Maureen Delaney, the Chairperson of the Off-Cycle Emissions Working Group, opened the meeting by welcoming all of the participants.
- B. The Agenda for the Seventh Plenary Meeting was reviewed and approved by the membership.

#### **Agenda Item 2**

- A. The minutes of the Sixth Plenary Meeting ("Sixth") were reviewed. The Chairperson stated that at the Sixth, Mr. Rodt of German UBA made a proposal that the US Not To Exceed ("NTE") should be the basis of the GTR. Therefore, the group will be proceeding with this proposal. The Chairperson also stated that a number of documents promised at the Sixth were prepared by the US EPA and distributed to the group for review.
- B. Mr. Albus of Germany stated that in his review of the Minutes from the Sixth, it was not clear if there this group's work would be part of the WHDC GTR or a separate GTR. Mr. Albus also wanted to know when a proposal was going to be submitted to AC3. The Chairperson stated that the group will be developing a GTR that is independent of the WHDC GTR. Ideally, the GTR will be completed at the same time as the WHDC GTR, but it does not have to be completed at the same time. The two GTRs are related. In the US, the NTE is a suite of protocols, but the NTE can also stand-alone. This is an issue for GRPE to determine how this work will be incorporated in WHDC. This is something the group will have to seek guidance on. The Chairperson stated that the US, will have hoped to present a proposal in June for review.
- C. The working group adopted the Minutes of the Sixth Plenary meeting incorporating the suggested amendments that had been received. The final version of the minutes will be submitted to GRPE as Informal Document 18 for the 48<sup>th</sup> Session.

#### **Agenda Item 3**

- A. The Chairperson presented a detailed timeline outlining the work that will have to be done before the group can propose a draft GTR to GRPE.
- A. The Chairperson proposed that the editorial committee meeting, which was tentatively scheduled for September 2004, should perhaps be a plenary meeting. The rationale for this change is to allow the working group as a whole to review the annotated agenda in September and make any recommendations to the editorial committee at that time before it begins drafting the GTR. If this change is accepted, then the two day meeting scheduled for Tokyo in November 2004 will be an editorial committee meeting only.
- B. Environment Canada agreed with this change to the timeline, stating that it may be a good idea for the group to meet and provide a good skeleton of a GTR to the editorial committee so that more substantive issues can be discussed at the meeting in Tokyo. The group agreed to this change in the timeline.
- C. Mr. Odaka, Chairman of WWH-OBD, asked the Chairperson to consider changing the date of the March 2005 Plenary meeting to April 2005, so as to coincide with the WWH-OBD meeting which is scheduled to take place in Cape Town, South Africa, because a number of members of the Off-Cycle working group are also members of WWH-OBD and it may be difficult to obtain travel clearance for two different

meetings. The Chairperson indicated that the working group will further consider Mr. Odaka's request and see if the March 2005 meeting can be changed to April 2005.

- D. The group adopted the timeline that was presented at the meeting, with the discussed amendments. The timeline will be circulated to the group as a separate attachment.

#### Agenda Item 4

- A. The Chairperson stated that in past meetings, much discussion took place trying to develop working definitions and acknowledged that the US EPA had been late in providing comments on the definitions proposed by EMA last fall. The US EPA did provide comments on the EMA proposed definitions to the group prior to this meeting. The Chairperson stated that definitions will have to be revisited as the GTR develops and moves forward to ensure that they are still relevant and appropriate. The Chairperson is still looking to receive comments from the different regulatory authorities on the definitions as proposed by US EPA. EMA stated that it may not be possible to reach consensus on the working definitions at this meeting because there was not adequate opportunity for review by members prior to this meeting. EMA recommended that the proposed EPA definitions be discussed at this meeting and that some time be allowed after the meeting for further consideration of the definitions. The Chairperson stated that this recommendation will be further considered as the discussion takes place and the group sees where it is.
- B. The definition for Element of Design is unchanged from the EMA proposal.
- C. The definition for Emission Control System has been modified from the proposed EMA definition. EPA believes that is important not to be exclusive by limiting the definition to exhaust emissions only, an example being evaporative emissions. OICA stated that evaporative emissions are not an issue for diesel engines. The Chairperson acknowledged that while evaporative emissions were not an issue for HD diesels, that the overall goal was to attempt to also create generic definitions where possible and this is a way to make the definition generic. EMA asked if there are other emissions which may be subject to this definition, such as audible noise emissions, because this GTR should only be concerned with exhaust emissions specifically. The Chairperson stated that the group will spend more time on this definition, but should keep in mind that the definitions should be generic where possible.
- D. The definition for Base Emission Control Strategy has been modified from the proposed EMA definition. The Chairperson stated that this is a new definition which is not contained in the current US EPA regulations. EMA asked the EPA to explain its intent in making the change from the wording contained in the proposed EMA definition which addresses a strategy that is active "**...throughout the speed and load operating range of the engine...**" vs. the proposed EPA language which talks about a strategy that is active "**...throughout essentially the entire [?] speed and load operating range ...**". EPA was concerned that use of the word "**throughout**" may be interpreted to mean a single map, and there is concern that in the future there may be a single base map which covers 100% of the speed and load operating range of the engine. This way, it provides more flexibility to manufacturers so that they do not have to design a single base map that will operate over 100% of the speed and load operating range of the engine. EMA stated that this is what it was trying to achieve with its proposed definition. The Chairperson stated that it appears that the intent of the two proposed definitions is the same, and all that we need to come up with is language that more accurately represents the intent.
- E. The definition for Auxiliary Emission Control Strategy has been modified from the proposed EMA definition. EPA believes that it is important to have specific examples included in the definition. EMA stated that the proposed EPA modifications take away the specificity contained in the proposed EMA definition; specificity which helped to clearly distinguish a BECS from an AECS. The proposed EMA language was tied to

a specific set of conditions. EMA also stated that when specific examples, which are not exhaustive, are included in a definition, it may lead to confusion or misapplication of the definition and perhaps the list should be appended as an example to the definition. OICA concurred that the list can create confusion, for example “**engine rpm**” is related to base maps, therefore further clarification may be required, because there may not be a single base map. The Chairperson agreed that further discussions will have to take place to see how the proposed definitions can be modified to address the concerns raised.

- F. The definition for Defeat Strategy has been modified from the proposed EMA definition. The proposed EPA definition brings the “**warm-up or cold ambient conditions**” exception up to the exception that also addresses engine/vehicle protection. Also, the fourth exception in the EMA proposed definition has been eliminated, because the “trade-off” may be difficult to define and in practice emissions are averaged over the test procedure and does not quite understand what EMA’s intention was in including this exception. With respect to the second part of the Defeat Strategy definition, EPA was concerned that the criteria in the proposed EMA definition, for determining if a BECS is a Defeat Strategy was not consistent with the criteria established to for determining if an AECS is a Defeat Strategy and the proposed EPA language is intended to provide consistency.

The UK stated that the trade-off exception is something that is required today, and if it is allowed have to ensure that neither pollutant exceeds the emission standards. The Chairperson indicated that this was a concern that EPA had when reviewing this definition. This may not be an issue, because the NTE limits would be a cap on the emissions, so if an exception like this is to be considered, it will have to have a cap. EMA acknowledged that the exception as proposed did not contain a cap on the pollutants and agreed that it may make sense to have a cap to constrain the trade-off logic and it is something that can be considered further.

The Chairperson asked if there are any concerns about moving “**warm-up or cold ambient conditions**” to the second bullet point. Currently, in the US EPA regulations, these elements are treated as part of the engine protection strategy. EMA stated that including these two items under the second bullet is not accurate, because today, manufacturers do not view these as engine protection strategies and this can lead to confusion. EPA acknowledged that these are not typically engine protection strategies. The reason for separating the two from the “**cold start**” bullet was because of the period of time the strategies are utilized. With a cold start strategy, the duration of the use of the strategy is not in dispute, it is for a finite period of time and it is not subjective, whereas with a cold ambient strategy, it could be in operation for variable periods of time, because there may be a gradation of cold ambient conditions and is more subjective in nature. Therefore, by moving the two to the second bullet, they are not necessary tied to the concept of engine protection, but to the concept of what is the minimum necessary AECS. EMA asked if perhaps this can better be expressed as an enumerated list rather than the way it is expressed in the proposed definition, because in that case it appears as if the two are tied to engine protection. EPA agreed that it may be appropriate to pull the two out, so as not to be read as part of the engine protection strategy.

EPA explained that the reason for modifying the second part of the Defeat Strategy definition was to bring consistency between the criteria for determining if a BECS is as Defeat Strategy and the criteria for determining if an AECS is a Defeat Strategy. Wanted to ensure there was a relationship between how AECS and BECS are viewed in terms of being a Defeat Strategy.

Mr. Rodt of German UBA asked if there is a difference between an engine that is warm and running under cold operating conditions and an engine that is cold. EPA explained that under engine warm-up, there are parts of the emission control system that are treated differently. Under cold-ambient conditions, though the engine is warm, there are other issues that come into play, such as condensation issues,

turbocharger issues, density of air, which can be addressed under engine protection. OICA added that when you look at low load conditions and the ambient temperature is low, if an engine protection strategy is not utilized, there is risk of misfueling and/or fuel combustion problems. There is always a need to protect the engine, but there are also extreme conditions that have to be addressed which may not be related to engine protection.

The Dutch representative asked for some clarification on the first exception of the Defeat Strategy definition, because it is not clear if an AECS is always part of the type approval process or not. For example, when there is a BECS and a different AECS is active, is the AECS always part of the type approval procedure or is it only present for engine protection. EPA stated that under implementation, the engine has to meet the test procedures and meet the standard, if an AECS is utilized and the engine fails the test, then the engine has failed to meet the standard. If an AECS operates during testing, and it modulates the system for engine protection or some other reason, the engine still has to meet the applicable standard.

The Chairperson asked if there is a way to be clear with the definition for Defeat Strategy.

EMA stated that there was not adequate time prior to this meeting to review the words of the proposed definitions and it appears that the proposed language makes the definition more confusing. EMA agreed to engage in further discussions with EPA and other working group members to work through the definitions with a view to providing greater clarity in the words while maintaining the intent of the definitions.

The Chairperson noted that it appears the intent of proposed definitions for BECS and AECS definitions may be similar, but EPA and EMA will have to work together to work out the words that are used. It was acknowledged that some more work will have to be done on the definition of Defeat Strategy. The Chairperson stated that there will be further communication and work on the definitions in the short term, with a view to presenting to the group a draft of proposed working definitions in advance of the next plenary meeting. Members of EMA, OICA, German UBA and Canada have expressed interest in participating in the discussions on the proposed definitions.

OICA stated that in principle it can agree on the adoption of working definitions, with the understanding that the definitions will have to be revisited later in the GTR process.

## **Agenda Item 5**

- A. The topic of In-Use Testing was raised at the Sixth and a brief discussion took place about having In-Use be part of this GTR. In response to the questions that were raised at the Sixth, EPA shared a document that outlines the terms of the manufacturer run in-use testing program that may help members understand the complexities of the program and to get a sense of how it may affect the timeline.

EPA made a presentation that provided some background information on how the settlement came about. Four regulations were promulgated which introduced the concept of NTE: Commercial Marine, 2004 On-Highway, 2007 On-Highway and Recreational Marine. All regulations have essentially the same construction, but with necessary distinctions for the specific engine type. The NTE looks at real-world operation, whereas prior standards were always defined by laboratory based test procedures. Litigation was filed against the US EPA by engine manufacturers, who claimed that the NTE represented standards, yet there was no test procedure associated with those standards. As a result, EPA, ARB and EMA decided to work together to come to terms of settlement on this issue. The settlement is based on a manufacturer run in-use testing program. The Proposed Regulation is scheduled for publication in June 2004. Starting in 2005, until the NTE is implemented in 2007, a mandatory pilot program will be run. EPA has agreed to issue guidance for the years prior to 2007 and how to implement the program for 2007. The program is much broader than just compliance with NTE. The test information that is gathered will

provide information that is useful beyond looking at compliance with NTE. It will give regulators and manufacturers a sense of average operation of a vehicle; as well it will help EPA monitor compliance with the standards. Manufacturers will be responsible for contracting with a fleet on which to install the PEMS system which will be used to generate the data. A set number of engines will have to be tested per shift, according to a hierarchy of testing, in order to generate the most useful information. EPA expects the proposed rulemaking to be noncontroversial, though it is expected that some adjustments to the language will have to be made.

EMA stated that EPA covered the terms of the settlement fairly, and stressed that this is a program for on-highway engines only at this point. EMA also stated that PM measurement will only be requirement to be taken in use if appropriate hand held measurement equipment is available, because such equipment is not currently available. Finally, if the working group agrees to pursue an in-use program as part of this GTR, the group must take the appropriate steps to ensure that the in-use program applies to all regions and that manufacturers will not be required to conduct an in-use program in every region.

The Chairperson thanked EMA for the clarifying remarks. When the group further considers implementing an in-use program, these issues will have to be addressed especially due to the different ambient factors worldwide and what the worldwide approach will be. It is important to have consistency in an in-use program.

EU asked if the EPA has established protocols for information collection during the pilot program, and how will the data gathered be analyzed. EPA stated that manufacturers will have to report all test results quarterly. All NTE events which take place over the course of testing will be added up and a metric will be developed to determine if the engine passes or fails.

UK asked how will EPA ensure that manufacturers are not being selective in the data that is submitted. EPA stated that there is a legal obligation to submit all data as part of the regulations. The pilot program will provide much useful information and it is the hope of the EPA that by the end of the program, the Agency will have a good picture of the information that is to be gathered. The EPA has the authority, on an annual basis to select the vehicles that will be tested and it is up the manufacturer to find these vehicles. The volume of testing that has to be done will make it prohibitive for a manufacturer to select which data to submit. The EPA will certainly be double-checking manufacturer testing, while trying not to duplicate the tests run by the manufacturer.

Canada asked what is the advantage for manufacturers to participate in the pilot program. EPA stated that the pilot program is not voluntary. Furthermore, the Agency has observed that in the type approval process, compliance with the NTE is still voluntary, and those manufacturers who make the NTE compliance statement, it eases the scope of the review of that manufacturer's applications for certification.

## **Agenda Item 6**

EPA will take the first step in preparing an annotated outline for the GTR, which will be shared with the group at least four weeks prior to the next plenary meeting.

The editorial committee shall consist of the following members:

OICA – Mr. Juergen Stein and one other member

EMA – 1 member

German UBA – Mr. Stefan Rodt

Canada – Mr. Ed Crupi

Chairperson of the Off-Cycle Working Group

Secretary of the Off-Cycle Working Group

Other members are encouraged to join the editorial committee so that a group consisting of no more than 10 individuals can be established.

**Agenda Item 7**

The next plenary meeting of the Off-Cycle Working Group will be held on a date to be determined in September 2004, in Chicago, USA. A draft agenda and any working and informal documents will be circulated to the membership prior to the meeting.

Dated this 21st day of June 2004

Joanna Vardas, Secretariat