

## **Third plenary meeting of the Working Group On Off-Cycle Emissions 14 January 2003, Geneva, Switzerland**

### **Meeting Minutes**

#### **Agenda Item 1.**

- A. Jane Armstrong, the Chairperson of the Off-Cycle Emissions Working Group, commenced the proceedings by reviewing the draft agenda that was circulated prior to the meeting. The Chairperson indicated that the agenda for this meeting is a continuation of the topics discussed at the Second Plenary meeting (2<sup>nd</sup>) in Paris on 8 November, 2002.
- B. The Agenda for the Third Plenary Meeting was approved by the membership.

#### **Agenda Item 2.**

- A. The minutes of the 2<sup>nd</sup> were adopted by the membership.
- B. The Chairperson stated that the 2<sup>nd</sup> minutes had been submitted to the 45<sup>th</sup> GRPE as an informal document.

#### **Agenda Item 4**

- A. The draft definition for AECS as drafted at the 2<sup>nd</sup> was reviewed.
- B. A proposed definition for AECS, as transmitted by the representative from the Engine Manufacturer's Association (EMA) was reviewed. The Chairperson, on behalf of the United States Delegation stated that the US EPA position is that it cannot, across the board, accept the basic engine map as a non AECS. There may be elements of the basic map that would not be acceptable to the US EPA therefore, a review of the entire map is necessary as part of the certification process. Certificates have been denied in the past on this basis. The US EPA will not support this portion of the definition of AECS as proposed by EMA. Representatives from the EU and the UK supported the US EPA position. OICA made a comment that perhaps the group needs to look at the use of the word "auxiliary", because this word implies the use of some additional strategies to the basic map. Another member from OICA noted that if there ever was a heavy-duty direct injection gasoline engine, the proposed EMA definition could be problematic. The membership decided that for the time being, the draft definition for AECS will remain as it was derived at the 2<sup>nd</sup>. The membership was asked by the Chairperson to give some consideration to the elimination of the word "auxiliary" from the definition.
- C. The draft definition for Defeat Strategy as drafted at the 2<sup>nd</sup> was reviewed.
- D. The Chairperson, on behalf of the US EPA, stated that one of the responses she received from her colleagues at the US EPA was that as technology advances, the need for an AECS for engine warm-up and cold operating conditions may no longer be necessary, and thus it may not be necessary to include this exception in the definition. The representative from Canada indicated that perhaps some additional language should be added to the second bullet point to include an AECS if there is an OBD failure, otherwise this may be considered a Defeat Strategy. The representative from Canada also wanted to know if an AECS can be used permanently to manage smoke. The

Chairperson indicated that this is not intended to be a permanent strategy, but a temporary strategy and used the example of defining a frail engine as one which has to go to an alternative strategy more than temporarily and on a rare occasion.

- E. A proposed definition for Defeat Strategy, as transmitted by the representative from the Engine Manufacturer's Association (EMA) was reviewed. The representative from the UK feels that we cannot use the word AECs in the bullet points, and should continue to use the language decided upon at the 2<sup>nd</sup>. The representative from Finland stated that perhaps we need to go back to the OBD discussions, because AECs fall into a category, which is not an optional strategy, but which is also not an infringement on the rule either, and thus fall into a gray area. There may be some AECs which exceed emission standards and others that do not, therefore they need to be categorized. The Chairperson indicated that this will be a problem, sorting out the AECs during the certification process. A member from OICA indicated that when speaking about alternative engine settings in the OBD context, the virtual vehicle engine will exist within the engine hardware of the basic engine, thus both these engines would have AECs, and they would both be compliant engines. The Chairperson asked if perhaps we need to consider the possibility of creating a definition for permanent alternative setting.

Looking at bullet point 2 of the EMA proposal, the Chairperson stated that the words "temporarily" and "reasonable" relate to operating conditions and regions and also to the concept of a frail engine. A representative from Germany stated that the original thinking was that an AECs should be activated temporarily under certain conditions. If we delete the words as suggested in the EMA definition, the use of AECs is going to be open to use under many conditions and this will be going beyond the intention of the definition. The representative from Germany asked if it was the intention of the EMA definition to link all of the bullet points, or are they intended to stand-alone. The EMA representative indicated that each bullet stands alone and is not dependent on the other bullet points. The Chairperson stated that the definitions being developed here are intended to be the definitions that will apply to the type approval process and which will apply under normal operating conditions, once they are established. A representative from the EU stated the use of the word "temporary" is necessary, because outside normal conditions, an AECs is allowed in the EU regulations, but within normal operating conditions an AECs is allowed, but only temporarily. The Chairperson suggested that EMA ponder the comments which have been made and respond further once the operating conditions are defined by the working group.

Looking at bullet point four of the EMA definition, the Chairperson asked EMA to define what it means by "other cold operating conditions". The Chairperson commented that the term "cold" may have to be defined, as it is very ambient specific. A member of OICA responded that looking at the US Code of Federal Regulations (CFR) there is no clear definition of ambient temperature when we have "cold operating conditions". When manufacturers want to make a change to the strategy, they must obtain the approval of the certification authorities. The member from OICA stated that this bullet point makes logical sense because it is a situation manufacturers face today certifying engines in the US. It is not possible to make a trade off and still meet the emission requirements. Manufacturers are still in discussions today with the US EPA on how to manage this trade-off and are reluctantly having to accept conditional certificates of approval to be able to carry on their business. The member from OICA stated how we resolve this issue is still open and one in which manufacturers and regulators still do not have consensus on. The Chairperson stated that there is sympathy with the manufacturers and this situation that they are experiencing and we have an opportunity here to try to work through this problem in a GTR. The Chairperson suggested to regulators present, that they should have some internal discussions with the technical experts on their staffs and try to provide a response to these draft definitions for the next meeting. A representative from Germany indicated that the proposed definitions will be reviewed and it will be

- helpful to receive more clarification from manufacturers on how these definitions will be used, especially when a strategy is an AECS and when it is a Defeat Strategy. The membership decided that for the time being, the draft definition for Defeat Strategy remains as it was derived at the 2<sup>nd</sup>.
- F. The draft definition for Irrational Emission Control Strategy was reviewed.
  - G. The Chairperson stated that she gave some thought to the necessity of this definition after the 2<sup>nd</sup> and has determined in her mind that this definition helps to define “effectiveness” and there is some value in how effectiveness is defined. The Chairperson proposed to leave the definition as part of the working documents and would like some comment on the interpretation of the definition she has provided. A representative from the UK stated he had trouble with what the definition was actually saying, is it saying that it reduces the effectiveness of emission control, or does it reduce the effectiveness of the emission control system. The Chairperson responded that the definition is trying to achieve a description of having an alternative strategy take over that reduces the effectiveness of emission control. A member of OICA took issue with the comment made by the UK representative stating that manufacturers who have to certify in the EU have to interpret this definition and design engines to meet it, yet a regulator admits that he cannot understand how to interpret this definition. The representative from the UK suggested that the wording is perhaps inadequate and if we are going to use this definition it has to be made clear so that both manufacturers and regulators understand what it requires. The Chairperson proposed that the workgroup give some thought to the comments made today and decide if this definition adds value or is redundant.
  - H. A draft definition for Element of Design was reviewed.
  - I. The Chairperson explained that this definition was the only definition for Element of Design found in the existing regulations and it is taken directly from the U.S. CFR. The representative from Canada stated that if we look at the proposed definition of AECS, an emission control strategy can only be an element of design. The representative from the Netherlands wants to know if this group is focusing on engine elements, or emission elements. The Chairperson stated that this definition is only necessary if we use the term element of design in the AECS definition. Furthermore, element of design is emission related and does not encompass the entire vehicle.

#### **Agenda Item 5**

- A. The Chairperson asked OICA if it could provide a brief review of the presentation that was made at the 2<sup>nd</sup> that introduced the concept of block operating conditions. This concept is based on a limited number of blocks that would apply to engines used in vehicles in different parts of the world and the thresholds to be met would be dependent on where the vehicle was being registered. For example, Australia would have to comply with Basic, plus High Temp.; the Canadian Rockies would have to comply with Basic, plus High Altitude; Northern Canada would have to comply with Basic, plus Cold Temp. Engines would have to be labeled according to the conditions they comply with. The engines would be tested on the same cycles and would have to comply with the same standards, but they would be additionally modified to meet the climactic and/or geographic conditions for the specific region the vehicle would be registered in.

At the 2<sup>nd</sup>, OICA and EMA were asked to prepare a report on the technology available and the costs associated with developing the technology to cover extreme altitude and climactic conditions. OICA prepared a document for submission to the working group that

outlines in brief the information the working group sought. This document will become OCE Informal document No. 3.

The Chairperson stated that one approach to establishing operating conditions had been discussed at the first plenary meeting where a distribution of travel in the EU was presented. An alternative approach would be to cover as broad a range of conditions as could be met with a technology of reasonable cost. The representative from OICA stated that OCE Informal document No. 3 is not exhaustive, but a representation. A representative from the EU stated that the operating regions and conditions specified in the EU Directives are currently under review and that ACEA has been doing some work to better identify the range of conditions within the EU. ACEA is trying to have a better statistical representation based on the amount of travel which occurs in Europe. A representative from the UK stated that industry has explained that they have specific design criteria for different conditions, but wants to know if industry has a specific proposal for regulators to consider which will address these issues. The Chairperson stated that industry had made specific recommendations for altitude and temperature in a presentation to WHDC. The member from OICA also stated that it is not only a matter of engine certification, but also what is necessary from a technological standpoint for the engines to meet all the various operating regions and conditions. If the engine cooling system does not have the capacity to give the right amount of air to the turbo, the engine will start combustion at too high a temperature and then the emission values will be too high. Thus, not only does the engine design have to be unique, but also the installation of that engine, therefore it may not be technologically feasible to meet all operating conditions. The Chairperson, as a final point, stated that we have three options to consider: a) look at 90% of world travel and set the operating conditions based on this; or b) look at engine cost alone; or c) draft a regulation that does not have specific requirements, but ones that are will be set regionally.

#### **Agenda Item 6**

- A. The Chairperson made a presentation on In-Use Testing in the United States.

#### **Additional Items**

The next plenary meeting of the Off-Cycle Working Group will take place on a date to be determined. Notification of the date of the next plenary meeting, along with a draft agenda and any informal documents will be circulated to the membership under separate cover prior to the meeting.

Dated this 22nd day of January, 2003

Joanna Vardas, Secretariat