

## **Eleventh Plenary meeting of the Working Group On Off-Cycle Emissions 13 and 14 September 2005 Chicago**

### **Agenda Item 1**

- A. The draft agenda was reviewed and approved by the plenary group. Please see Attachment 1 for the draft agenda and Attachment 2 for the list of attendees.

### **Agenda Item 2**

- A. The minutes of the Tenth Plenary Meeting were reviewed.
- B. OICA asked that the following correction be made to minutes on page 3:  
Current text:  
"The EU representative asked what OICA's rationale was in changing the **cumulative** frequency from 95% to 98%. OICA found that the 95% cumulative frequency was too low and thus suggested looking at 98% or 99.5%.  
  
Revised text:  
"The EU representative asked what OICA's rationale was in changing the **upper** cumulative frequency from 95% to 98%. OICA found that the 95% cumulative frequency was too low and thus suggested looking at 98% or 99.5%.
- C. There being no other corrections or revisions to the minutes, the minutes were adopted by the Plenary Group and will be submitted to the GRPE secretary for posting.

### **Agenda Item 3**

- A. JASIC made a presentation titled "Results of Engine Speed Frequency Analysis in Actual driving Around Tokyo Metropolitan Area".

EMA stated that there is a fair amount of activity in the lower speed assuming the  $N_{10}$  is at 15%. Recognizing how the NTE works, you have to be in the zone for some period of time, which is 30 seconds in the US, to have a valid NTE event. Is the activity shown very transient going through the zone or steady-state in that it would not be included in NTE evaluations? JASIC responded that it is not confirmed but semi-steady-state operation with those low engine speed is frequent in Japanese urban driving.

The Chair stated that a possible issue is that in the US we may find that vehicles do not have a valid NTE event in urban driving, because there may not be very many 30 seconds events. If this is not the case in Japan, then expanding the zone may not accomplish what JASIC wants, unless you also shorten the time period for valid NTE event. We won't know unless look at the data on a second by second basis, if changing the WNTE control zone will have the desired effect. Vehicles in Japan are much lighter, than US vehicles for which we have NTE data, therefore the US experience may not be as applicable due to the size of the vehicles. If you lower the speed zone, it picks up 10 to 15% more of the speed operation for that vehicle.

EMA stated that if someone were to do a similar analysis, we may get a better sense of US urban driving conditions, but it is hard to get a valid NTE event in the US in urban conditions, because the engine does not operate long enough in steady state.

Canada stated even if the zone is expanded it may not increase the amount of coverage. The Chair responded that by making the Zone larger the probability increases that more of the vehicles activity will be captured. The only way to know is to get some data and analyze it. It is hard to get an NTE event with urban driving in the US, because the engine operating condition always moving in and out of the NTE zone.

EMA stated that from a US manufacturer standpoint, moving the boundary down presents technological problems, such as turbo matching. If the speed boundary is moved lower, this will necessitate having a higher limit for the NTE multiplier, primarily for NO<sub>x</sub> because the EGR rates would have to change in order to have a turbo match and this results in higher NO<sub>x</sub> emissions. The Chair asked if any manufacturers have information which can be shared with the group on this issue EMA raises. Since we are talking about implementation post the 2010 timeframe, do we have any information if expanding the zone, or making it smaller, will be impacted by technical feasibility issues? It is expected that vehicles would have both NO<sub>x</sub> and PM aftertreatment in this timeframe, so will it be an issue?

OICA concurred with EMA's position. Does Japan have second by second data to see if there is a 30 second event, which can be shared with the group? If Japan can provide the driving pattern with the major increase of operation, we can possibly confirm that that operation in this low range is short and will not add much. JASIC responded that low speed operation is primarily steady state operation in Japan. Only showed the engine speed of the vehicle. Still have to analyze the engine torque operation, and are planning to do this next summer.

The Chair asked if the data which has been collected and shown here is engine speed data and is the proposal primarily based on an analysis of engine speed data and if JASIC will be doing an analysis of engine torque or does this data exist already, so that we can see how much activity is captured in this lower speed? JASIC responded that at the previous OCE meeting, we were only asked to provide engine speed range data and this is what has been presented. Regarding the engine torque analysis, this data will be accumulated this winter.

The Chair stated that in the draft GTR it is up to the individual authority as to how testing will be performed, either in a lab or using in field measurements or if we intend to allow for both. How does JASIC propose to collect this data? JASIC stated that in case of test bench testing, can test at the lower speed and low torque in steady state and for 30 second interval. At high speed, it is difficult to obtain 30 second continuous data in Japan. If we carry over a steady state test as the WNTE, it is better to have a lower engine speed zone

The Chair stated that if the rpm drops to the lower end of the range, you are not making a significant change to the zone. The information presented on expanding the WNTE is directionally helpful as long as we can address the appropriate standards and technical feasibility issues and test conditions. There is a need to address off-cycle emissions and we are doing that by having a WNTE and a prohibition against defeat devices. The Group appreciates the proposal and the Group should be prepared to discuss this at the next meeting if we want to incorporate this into the draft GTR.

EMA wants to emphasize that as the zone gets bigger the higher the limits will have to be. We need to make a decision based on technology we know of today and based on what we know today, this change in the zone will result in increased limits. The Chair stated that he can't agree with this statement at this time and does not believe that this is an automatic assumption that if the WNTE zone is bigger, the limits have to increase. We have to see what the feasibility is, because right now we do not know what the technology will be. OICA stated that one has to be careful when extending the zone and look at it as a whole and not individual points. Sweden stated if there are problems we are aware of with current technology, there will be problems with limits that were based on the old zone.

The Netherlands stated that we have to determine if a flat ceiling is a good approach or do we need to look at more variation? An increase in the size of the zone gives manufacturers more area to optimize engine map, a flat limit may not be an ideal approach. We may need variety due to the way engines will be mapped, but we also don't have enough information on the new technology. In the Netherlands, we are doing some work to see how WNTE works with the ARTEMIS cycle – to see how many times engines are operating in the WNTE zone. So far we have found that some areas are high, especially PM. The Netherlands may be able to provide an

update at the next meeting. The Chair indicated that the Group would be interested in seeing this data

Canada reminded the Group that the objective of the GTR is stated in the 1<sup>st</sup> paragraph, and this may provide a good statement of what we want to do. If Japan is saying they have driving in these lower speeds, there may be trade-offs that may have to occur to broaden the range. We need to understand the trade-offs and what is an appropriate level of control over the WNTE zone.

#### **Agenda Item 4**

- A. The US EPA made a presentation on "Not to Exceed (NTE) Emissions During US EPA Marathon Testing."

Canada asked if the route data was broken into the same segments for each marathon?

US EPA responded that the routes were broken down based on how the driver wanted to break them down, but not in a prescribed manner. Each sequence does not necessarily end with the engine being shut down. The driver may let the vehicle idle, but drivers did stop at night. They typically drive 12 to 14 hours per day. US EPA stated that it took 1 to 2 hours to set up the Rover, due to the physical constraint of getting the flow meter on because of its rather large diameter.

TUV stated that similar activities are taking place in the EU. There is a PEMS validation program similar to that of the US EPA. TUV indicated that in the EU, there has been some concern with the ECUs accurately broadcasting torque. In order to get info out of ECU, they need manufacturer support especially with OBD which may not signal to give information about torque. Another approach is to have torque measurement on vehicle or perhaps to change the approach of the type approval process therefore having no need for vehicle testing. Does the US EPA want to go on doing calculations on the vehicles in the way they have been doing them? Does the US EPA plan to continue marathon testing because it is hard to get and keep vehicles for a long time?

US EPA anticipates carrying on the program into the future. With manufacturers having an in-use program, there may be some pressure to stop testing. If, after time, the manufacturers show they are getting the job done, the US EPA testing may decrease or stop. The marathon testing usually runs about ¼ of the time. The vehicles used for this testing are generally rental trucks, though sometimes we may get a truck from the army. It is a challenge for US EPA to get a truck from private source. The advantage of marathon testing is that within a 2 to 3 day period go from an elevation at sea level to 9000 ft and changes to ambient conditions.

The Chair stated that US EPA is thinking of changing its approach in the future. The US EPA went through a rulemaking process that concluded in June which established manufacturer run in-use test program and it will be phased in over the next several years. The first focus is on NOx measurement with no compliance liability. The thought is that US EPA testing may be phased down with the hope that we will be getting more data from companies as the in-use testing rolls out. The US EPA manufacturer run in-use testing program has a phase in schedule: The first two years will be a learning period and therefore the US EPA will not use data on its own to commence an enforcement action, because this is a new program for the manufacturers and the US EPA and the instrumentation will also be new. After the two years, there will be a compliance element, with the potential for enforcement against the manufacturer.

Looking at the data on slide 26, the Group needs to come up with a GTR to address offcycle emissions. The group has to remember that whatever approach we take can't ask WNTE to do everything, but which will result in a robust method of control. There are three elements for a robust method of control: WHDC, a prohibition on defeat strategies and a robust WNTE.

Therefore it is not the expectation that we want engines on average to be at the WNTEcap, but to make manufacturers aware of what strategies are not allowed. The goal in the US has been on average to comply with the US FTP standard. If you look at the data accumulated on slide 26, on the far right hand side, you can see that average value of this engine, was below the US FTP standard, over several thousand miles.

- B. A presentation was made by the EC representatives on in-use testing which has taken place in the EU.

OICA made a clarification on the EC presentation, indicating that they are in complete disagreement with the results reported by the EU today. The program discussed was set up in co-operation with engine manufacturers. The objective is to define a protocol for measurement on vehicles, which have been provided by manufacturers. The testing conducted on the road has nothing to do with real world operation, it was only conducted to establish a protocol for on-vehicle measurement. Using the data which is generated to define the WNTE has never been discussed and is not part of the program. There are other test results that have been collected over real world driving conditions in the EU. The 1<sup>st</sup> step is to develop a protocol, the 2<sup>nd</sup> step is to develop the WNTE, but under a broader range of conditions. OICA strongly objects to the EC making a presentation at the next OCE plenary meeting.

The Chair stated that the scope of the formal US proposal to develop an off-cycle GTR which has been approved by AC-3 does not prevent us from having an in-use element. We should focus on the definitions and prohibitions against defeat devices first and we can go back to the GRPE and ask to expand the scope of the working group if appropriate. At this time we should concentrate on these elements and perhaps it can be something we can add on later.

Canada pointed out that when we get into the topic of in-use testing, we also have to talk about enforcement. This group should focus on certification and enforcement should be left to the individual countries, though the countries should be enforcing the same requirements.

EMA stated that as engine manufacturers we go to great effort to put out a product which we believe complies with the regulations. If enforcement is left up to each member state or individual country and they determine compliance differently, this will create an intolerable situation for a manufacturer who is trying to do the right thing. US manufacturers will have a significant burden of conducting in-use testing in the United States. If we do not address enforcement, there is the potential to have compliance programs which have to be managed on a worldwide basis.

The Chair responded by stating that this is the reality of how things are done today. Off-cycle regulations will only add an additional element to the differences between countries. It is best to take this one step at a time, because even with WHDC and OBD the enforcement will be different from country to country.

## **Agenda Item 5**

- A. WNTE Compliance Statement

At the 10<sup>th</sup> Plenary meeting the US EPA made a presentation which included a revised compliance statement. At the meeting the question was asked if the GTR needs a compliance statement and what function does it serve. We need to determine if the GTR needs a compliance statement and what is the underlying purpose of such a compliance statement.

The EU stated that this is still an open issue at the Commission staff level, who are having discussions. Their recommendation at this point is that they do not see a problem with having the statement in the GTR, but this is not yet a the final position

The representative from the Netherlands did some research to see if a compliance statement is required in any ECE regulations which could be used as a precedent for a compliance statement

in this GTR. He found some language in ECE Regulation 13, Annex 18, which is a braking regulation

*3.4. Safety concept of the manufacturer*  
*3.4.1. The manufacturer shall provide a statement which affirms that the strategy chosen to achieve "The System" objectives will not, under non-fault conditions, prejudice the safe operation of systems which are subject to the prescriptions of this Regulation.*

Therefore, having a WNTe compliance statement would not be unprecedented. This statement does not specify exactly what a manufacturer must state.

OICA believes that the reasons for the statement are similar to the reasons for having a statement in WNTe, because it is simply not possible to test for all conditions which would be encountered in real life.

Sweden stated that it is not clear what the UK representative had in mind at the 10<sup>th</sup> plenary meeting when he questioned the need for a compliance statement. There are two aspects to this and perhaps many legal issues which arise out of them. One, when it comes to a member state to enforcing requirements, having the statement will allow the government to not check engine or two, will allow a manufacturer to avoid responsibilities for not testing under every possible condition.

The Chair stated that the changes US EPA made to the compliance statement were in partial response to the EMA comments, primarily that the statement must have some basis in data.

Canada can support making the change. Neither the agency or the manufacturer can guarantee that the engine will meet the standards under all possible conditions, and manufacturers may have difficulty making the first statement

OICA reminded the Group that in its proposal, the manufacturer would either provide data or provide a compliance statement, but not both.

TUV supports the concept of having a minimum amount of data required at the time of certification. Due to the competition between certification authorities, having a compliance statement supported by a minimum amount of data would provide greater assurance to the governments. A minimum requirement or a baseline of what needs to be done by all who adopt the GTR, so there is no opportunity for some authorities to set a lower bar to show compliance. It is not necessary to describe in detail what points have to be run, but just tell manufacturers they have to submit 20 points, for example.

Canada reminded the Group of the GRPE Secretary's statement at the last plenary meeting, where he made it clear that WP.29 (AC3) states that a GTR should only have technical requirements, such as limit values. The elements for a type approval procedure should not be in the GTR, but under an ECE regulation. All administrative procedures should be under the regional regulations, not the GTR.

The Chair stated that perhaps we can still include some elements of type approval as part of the GTR, the modes to show compliance. This must be allowed because this is what WHDC does, but this does not prevent countries from enforcing the procedures. From the US perspective it is not necessary to have a minimum amount of data, therefore we have to determine if this requirement will be part of the GTR or in an ANNEX to the GTR.

The Netherlands agreed to draft a proposal for the WNTe compliance statement for consideration by the Group.

The Chair stated that the draft GTR contains a statement already, but the language shared with us today by the Netherlands, found in ECE Regulation 13, does not prescribe the text of a specific statement, it merely says a "statement" is to be provided. Is there a reason for not prescribing the statement in this GTR? Canada stated that if we want to create a level playing field, all manufacturers should have to say the same thing.

The Chair stated that the engine family concept in the US does include all of this. The basis for the statement does not always have to be based on emission data, but it can be based on engineering judgment. Do we want to allow the statement to be made only on the basis of engine data? EMA stated that this can be problematic because can't test all ambient conditions. The Netherlands concurred stating there is a problem when we do not have any data at all which fulfills the requirements for making the statement.

The Chair agreed that this may be an issue and suggested perhaps having some data, and can show trends or knowing what the control systems are, basing the compliance strategy on some data and some engineering judgment.

EMA asked if a manufacturer had a 30 second segment of data under some conditions which exceeded the NTE limits would this prevent them from making that statement even if this one piece was derived under a strange set of conditions and able to explain it as a rare circumstance. The US EPA presentation shows that .2% of the time engine fails during marathon testing. Can we still make the statement? The Chair stated that this would have to be decided under the specific country's enforcement procedures

The Netherlands stated that as a type approval authority we have the same questions, and this is why we want a minimum amount of data especially because we have so many different type approval authorities. TUV agrees with this. In the EU they have some statistical approach to testing engines and know that a percentage of engines will be within the limits and a percentage of engines will be outside of the limits.

Sweden stated that the situation EMA asks about is unique, because the manufacturer knows that the engine will fail, therefore this is a design issue. Canada suggested that this could be addressed through the use of deficiencies. The way the GTR is written, we have limits which apply to engines, not emission control strategies/engine system.

TUV stated that the limits don't just apply to engines but to entire engine system as defined in 40 CFR 1065. All engine emission control systems etc, must meet the limits. The Chair asked how this is addressed in WHDC (pg 13 of WHDC, s5.1)? We should be consistent in this GTR. Do we want manufacturers to come up with a statement or do we provide the statement?

Canada prefers that the Group come up with the wording of a statement, because this is good for both manufacturers and regulators.

The Chair noted that the Editorial Committee will take the draft language from the Netherlands and the draft US EPA language under consideration for the WNTE compliance statement. Both are trying to accomplish the same thing, both are an improvement over what is currently in the GTR.

The Group decided that Paragraph b) from the US EPA draft compliance statement will be incorporated into Section A.3 of the GTR.

## B. Definitions

The Chair provided a brief background on the history of the definitions. The GTR has two elements: a prohibition against defeat devices and the WNTE.

OICA and TUV advised that the latest version of the EU on-highway directive included definitions for some of the terms we are trying to define, so the Group should look at those definitions to ensure consistency where possible.

### **Element of Design**

The EURO IV definition for Element of Design was accepted by the Group as the new working definition.

### **Emission Control Strategy**

The Chair asked what was rationale for including the words "...that includes one BECS and one set of AECS" in the definition. OICA stated that this is an intermediate fix until a robust NTE can be established, which will not apply to the long term, so can be eliminated from inclusion in this GTR. Sweden and the Netherlands agreed with this statement.

EMA stated that if we go with the EURO IV definition, we will have to define "Engine System". OICA stated that there is a definition for Engine System in the Directive.

The Chair stated that the EPA proposed definition is different because we do not want to limit the definition to just exhaust because in the future the GTR may apply to other emissions. This GTR may apply to SI engines. We do not want to control noise under this GTR, but we must recognize that in the US we do have crankcase emission standards. OICA stated that there are also closed crankcase requirements in Japan, but not required in the EU until EURO VI. Canada stated that though the WNTE may just deal with exhaust, the defeat strategy definitions used may be broader.

The Group decided to use the US EPA proposed definition as the new working definition.

### **Base Emission Control Strategy**

The EMA and EURO IV proposed definitions are identical, except that the EURO IV definition contained examples. The Group decided to use the proposed definition, without the examples, as the new working definition. Some of the examples can be included in Section A.3 of the GTR.

### **Auxiliary Emission Control Strategy**

The Chair asked if there is an AECS that can become active and not modify the BECS. EMA stated that some manufacturers may move over a different map or which may modify the existing map. The proposed US EPA definition can be viewed as more limiting because in some cases it may replace or modify. Canada stated that what is critical here is that the AECS changes/ becomes active by replacing or modifying. OICA stated that in some cases the AECS does not replace or modify, but may be separate. The Chair asked for an example of an AECS that becomes active and does not replace or modify.

Canada emphasized that the bottom line is that it is different, it does not matter if it replaces or modifies the BECS, it does not need to be linked to the BECS, but it is different than the BECS. Can we take out the link to the BECS?

TUV stated that it may not be different, so can't have this, may just modify the BECS, also have concern with the word "replacement" in the definition because we do not define "replacement". Do we need to define the AECS and BECS if we have a robust NTE and all encompassing Off-Cycle GTR. The Chair stated that we still need a definition because WNTE will not apply everywhere and therefore we do not have a robust and all encompassing WNTE. Thus we need good definitions. EMA stated that in its experience with US EPA, manufacturers thoroughly describe the conditions when the engine moves into the AECS and out of the AECS.

Canada stated that the definition has to be clear in that it is an entire set of maps needed to operate the engine under normal conditions of use.

The Group decided that the EURO IV proposed definition will be used with the following modification "...that becomes active and replaces or modifies..." .

The representative from the Netherlands suggested including drawings to help understand how the definitions work.

The Group decided to include the last part of the US EPA proposed definition in Section A.3 of the GTR because examples may be helpful in understanding the definition.

#### **DEFEAT STRATEGY**

The Chair stated that the proposed EMA and US EPA definitions are much closer than the EURO IV definition. Sweden clarified, stating that the EURO IV Directive contains in the provisions of the Directive what is an acceptable AECS, but this is not included in the definitions.

The Chair asked how sections 6.1.5.5 and 6.1.5.6 of the EURO IV Directive relate to one another? What is Operational safety? Complete failure/ limp home strategy? Aren't these the same as the 1<sup>st</sup> exception of the EMA/US EPA proposed definitions? OICA explained that the 1<sup>st</sup> exception is before damage occurs to the vehicle. The 2<sup>nd</sup> is after the vehicle has already experienced damage.

The Chair stated that with a robust WNTD and WHDC there is no trade-off. If you have any of these strategies and are meeting the emission standards, it will be covered under the 1<sup>st</sup> paragraph of the Defeat Strategy definition. EMA stated that WNTD does not necessarily include cold operation and start-up. Also, manufacturers still need a trade off at low barometric pressure which is needed to control smoke (for example, turn off EGR or advance the timing to control smoke) therefore the tradeoffs are still necessary. This may not be an issue for engines with filters, but some engines may not have filters.

The Chair stated that he could support reincorporating the exclusion from the EMA proposed definition for the current working draft definition.

The Chair asked why are cold ambient conditions included in the proposed definition, because they should be captured by the NTE and we do not want to include something if it is not necessary. EMA stated that there are strategies that we have to use even after the engine has started because the intake manifold temperature is so cold that the strategy is needed. OICA stated that this is covered in the EURO IV Directive in Section 6.1.5.3

The Chair agreed to the change to the working definition to include engine starting and warm-up and leave note to the Group that we may have to revisit this. EMA added that just because a strategy is allowed, it still has to be justified at the time of certification. The Chair stated that from an US EPA perspective, we do not want to make the definition expansive, unless we can think of a general reason to call it out. EMA stated that the problem we may run into if we do not include them, is that it may limit a regulator's ability to allow something that they may need to allow. The Chair agreed that this is a valid point, and we will include notes in the GTR to revisit this.

OICA suggested that we include these exceptions in the GTR, rather than in the definitions, similar to the EURO IV Directive.

The Chair stated that it is the US EPA position to include the exceptions in the definitions. This suggestion would pose problems in the US because of the way Congress has authorized US EPA to write regulations which prohibit the use of defeat devices, therefore it would pose problems for the US EPA if the defeat strategy definition does not include the exceptions.



The Chair stated that regarding the trade-off exception, which is identical in both the EMA proposal and the EURO IV language, if this strategy is covered by the test procedure, then it is not needed. We would like to allow this AECS, but under limited circumstances.

The Group decided to include a modified version of the EMA proposal for the BECS exclusion, changing the word "standardized" to "applicable".

### **C. Control Zone**

The Chair stated that the current control zone is based on the EURO III test. At the June Plenary meeting, OICA put forward, for consideration by the Group, a WNTE control zone based on the WHDC. Can we base speed boundaries of the WNTE on this mapping procedure? OICA stated that the Group has to discuss the cumulative frequency and what the values will be and we need to define the percentages.

The Chair stated that the WHTC, new transient test cycle, has a schedule for % load and % speed. In principle it makes sense to base it on the WHDC GTR rather than individual countries existing test procedures. In principle, we can make the zone any size necessary based on definitions from WHDC. It is also good practice to have the WHDC and OCE GTRs compliment each other rather than referring to some other regulations.

The Chair put forward that we make this change in the GTR-

% load = x

% speed = y - ??

This only deals with speed boundaries, not torque boundaries

OICA stated that the US boundaries are sound for torque, so there is not an issue with keeping those boundaries.

The Chair asked if anyone objected to having the boundaries move away from the 13mode test to the WHTC?

The Chair asked the Group what the ranges should be for speed and torque? We have a proposal from Japan for lowering speed values, and have asked Japan if we find a way to control the zone, is there data of what  $N_{10}$  should be? If we define the control zone on the WHDC, what value is appropriate from the Japanese data presented today? From the US perspective, we would not be in favor of limited upper range because the current control zone does not have a limit on the upper speed range, so we want it to go as high as possible, because if we cut it off, we are reducing the number of valid WNTE events. The US prefers to have it as it is currently in the GTR, and just define a lower value based on the WHDC. Based on the opinions of the Group, a change will be made in section 7.1.1. to base speed range on WHDC. We want to make good decisions based on data, but also make decisions in a reasonable time frame. We will put 25% & greater and include text that these are place holder numbers and still waiting for data from OICA, Japan, JRC/EU Commission and the Netherlands.

### **D. Ambient Conditions**

The Chair stated that section 6 of the draft GTR has 2 options that are direct carryovers from the US NTE regulations. What type of ranges should apply for the WNTE?

OICA stated that they have had discussions on this topic and have concern about the 1500 meters above sea level condition and whether this is feasible as a general application worldwide. Does it make sense to have added engine cost to meets these limited applications. Do we want to have one worldwide version of the engines, or regional versions of the engines? OICA has foreseen some technological problems and has issues with regional only manufacturers. OICA

suggested instead of having one limit, have regional requirements and the regional authority decides which option they want.

Sweden stated that in the EURO IV Directive, starting in 2008, a decision was made that the basic emission control system, in order to work properly, had to meet an ambient temperature range be between 2°C to 30°C and an altitude of 1000 meters. This is down from an ambient temperature range of 6°C to 30° degrees C today. This is meant to be the the basic timing strategy. Outside of this, you could utilize an AECS, but only if demonstrate that it is the lowest possible strategy. Some member states want to get below 2°C particularly in Northern Europe.

EMA stated that in the US manufacturers use certain AECSs that are not related to ambient conditions, for example an engine may have an AECS which relates to smoke, would this GTR not allow such an AECS? OICA stated that these are temporary AECSs that are allowed within a range, but beyond the range you have to prove it. EMA asked if we need to define “Temporary AECS”?

Japan stated that 1000 meters altitude is fine for Japan. As for temperature, they have not had enough discussions on this topic, but it is known that extremely high temperature is not an issue in Japan.

The Chair stated that for the U.S., 86°F is not very warm, and having NTE ambient temperature limit go only to 86° F does not make sense for the U.S. What are the Group’s thoughts for the ambient temperature limit value being higher in the OCE GTR? The Group needs to make a decision on the temperature and altitude limits. If you are opposed to the proposal, we have to have comments as to why. The Group’s current schedule is to provide GRPE a draft GTR next summer, and then to go to WP.29 and AC-3 in early 2007. The only proposal we have so far is the US approach, so the Group should try by the next OCE meeting to form opinions on what the temperature and altitude boundries should be. The Chair has previously asked EMA if they believe both options are necessary, to see if the US could support eliminating one of the two options.

EMA stated that it would make more technical sense to get away from altitude and talk about barometric pressure because the engine reacts to barometric pressure. The Chair stated that the US would consider this, but non-technical people may not see the logic behind this. Are there any policy implications for those in high altitude areas?

OICA stated that we can take the constant degree approach, have an altitude limit and then say it is equal to a pressure (for example, see page 82 of the US Heavy Duty Consent Decree).

The Chair stated that for Section 6.1 the Editorial committee will come up with a graph as to what option A and option B look like, so that the Group can decide how to proceed.

#### **E. WNTE FACTORS**

The Chair stated that WHDC, as drafted, won’t have emission limits for a first stage GTR, and the OCE GTR, as currently drafted does have emission limits. OICA proposed the values which are listed in Section 5.2, Table 1, which are based on the US EPA numbers, except for CO.

OICA stated there is concern when limit values are extremely low, (like in 2010 when NOx is at 0.20 g/bhp-hr in the US). Therefore, we may need a new factor for extremely low NOx emissions, maybe not necessarily a factor, but an additive value. OICA proposes to put in a new line for extremely low values, at least as a placeholder. EMA expressed concern that rounding conventions will play a big role as emissions approach zero.

The Chair supports the OICA position to have the Editorial Committee include these factors for extremely low values as place holders. Japan stated that if the WNTE region is extend, we should keep the same factors to keep things as simple as possible.

EMA stated that we also need to consider having measurement allowances and it will be an oversight not to include this in the GTR. This is part of EMA's concern with the GTR, that there is nothing from precluding a member state from having an in-use procedure and not having provisions for measurement allowance. This will be difficult for manufacturers.

#### **F. Smoke**

The Chair stated that OICA recommended having smoke measured as a light absorption coefficient, because all regulations have a neutral way to express smoke.

EMA asked if we even need smoke emission requirements. If we can eliminate this in its entirety, we can avoid a lot of issues, especially the time which will be spent in discussing measurement.

The Chair was not prepared to say that smoke is not needed. This will not be relevant in the US because smoke control is so tight, but in the context of this GTR and because we don't know what levels will be, other governments have to weigh in on this issue.

TUV stated that EU will have smoke limits for a few more years, but would be open to a solution which does not eliminate smoke completely, but which deletes the smoke filter option.

Japan stated that their procedures use a filter for smoke measurement. Thought they have not discussed this internally, it is possible to eliminate smoke from the GTR and the Japanese government can introduce smoke requirements independently, if necessary.

OICA stated that the GTR may be applied in countries which still have a need for a smoke requirement.

The Chair stated that perhaps the way to deal with this is to have an exclusion, for example, for low PM values, smoke does not apply.

Canada stated that maybe there is a way to give general provisions on what needs to be done for smoke, rather than spending a lot of time developing language for procedures which may not apply to those countries which have low PM levels.

The Chair stated that we can decide at a later time to drop the provisions and he would be in support of eliminating 5.3.1 and eliminating the steady-state smoke number in 5.3.2.

#### **Agenda Item 6**

A revised timeline for the work of the plenary group and EC was reviewed and accepted

#### **Agenda Item 7**

The next plenary meeting of the Off-Cycle Working Group will be held in Geneva, at the Palais des Nations, on January 17<sup>th</sup>, 2006 from 9:30 am to 12:30 am. A draft agenda and available materials will be circulated to the group in advance of the meeting.

Dated this 22<sup>nd</sup> Day of November 2005

Joanna Vardas, Secretariat