GRB-ASEP-04-15

(4th session of the GRB Informal Working Group

Additional Sound Emission Provisions (ASEP), July 11-13, 2017)

**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

World Forum for Harmonization of Vehicle Regulations (WP.29)

Working Party on Noise (GRB)

Informal Working Group on Additional Sound Emission Provisions (ASEP)

**Draft Report of 4th meeting of the Informal Working Group ASEP**

**Washington (at Alliance Office)**

**from Tuesday 11th July – 14:00 afternoon to Thursday 13th July– 16:30.**

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|  |  | Working Documents |
|  | **Welcome and opening remarks** |  |
| Mr.Pardo as chair of this group, opened the meeting welcoming all the participants. |
|  | **Introduction of participants and organizations** | ASEP-04-10ASEP-04-14 |
| The list of attendees is available as document ASEP-04-14. |
|  | **Adoption of the agenda****Adoption of reports** | ASEP-04-01 Rev.4ASEP-02-12ASEP-03-19 |
| The agenda has been adopted as proposed in document ASEP-04-01 Rev.4.The reports of the previous session have been adopted. |
|  | **Exchange of information on national and international requirements** |  |
| No additional information. |
|  | **Current procedures - Consideration of some technical elements for current procedure:*** **IMMA**
* **France**
* **China**
 | ASEP-04-12ASEP-04-07ASEP-04-11 |
| * **IMMA – ASEP-04-12:**

IMMA presented their ASEP concept according to UN R41.04.🡪 This test procedure is simple with only 2 check points, of which one is the type approval condition. 🡪 However, each point is tested three times. In addition the technical service may test two more "magic" points.***CONCLUSION: The group concluded that this way is testing is not suitable for modern electronically controled devices. The concept in limitation is easy, but not given for passenger cars, which have more complexity.**** **France – ASEP-04-07:**

Louis-Ferdinand Pardo presented the document ASEP-04-07 with 3 alternatives for full or partial indoor tests:* Alternative 1: indoor same as for Annex 3 with outdoor tests for tyres noise
* Alternative 2: indoor without tire noise compensation
* Alternative 3: indoor could allow to define Lwot i and Nwot i for each position – exploration of partial throttle will be easier - The third option is a more refined method to measure the complete powertrain sound emission over engine speed even under partial throttle – this alternative is depending of free assessment.

Indoor increases the repeatability of the measurement conditions, is independent of the weather conditions, decreases testing load. The alternatives 1 and 2 can be easily introduced in current regulation. The alternative 3 allows to explore a wider range of engine speed without additional workload. The chair proposed to wait for next GRB and according to the feedback from GRB, we will see if we can improve indoor. Then to be followed with next ASEP IWG in November if GRB accept the idea.Same attendees as Germany would prefer to change the current outdoor method and then to see what it would be possible with indoor because for technical service they fully agree to support indoor method.*The group decided that it is premature to introduce indoor testing in whatever way for ASEP.****CONCLUSION: According to the feedback of the next GRB, the group agreed to focus on a revised and simplified outdoor testing and then to resume the consideration on an indoor testing capability.**** **China – ASEP-04-11:**

Dongming Xie presented a document to explain the current situation of the noise in China and its view on ASEP testing and pleaded for a more realistic control range:* Real driving conditions in China for vehicle of category M1: driving time percentage/driving distance percentage with introduction of idle/stationary from consideration of 4000 vehicles
* Complaints from residents mainly for highway and express roads crossing residence areas
* Test conditions concerned for ASEP: stable and burst noise
* Test methods for Engine speed and engine acceleration and for Vehicle speed and vehicle acceleration
* In conclusion:
* What high speed range should be considered for ASEP? What kind of vehicles needs ASEP? What test method?
* The actual control range is too wide with regard to vehicle speed (not more than 70 km/h), engine speed and acceleration (< 3m/s2).
* Testing could be simplified by using a calculation scheme for gear selection, e.g. for low speeds use (1+gear i)/2, would mean for example if gear i is the 3rd gear, then the test at 30 km/h would be in gear (1+3)/2 ==> gear 2
* In addition tests should be elaborated for "burst" sound such as kick-down of a vehicle
* ASEP should consider "engine speed acceleration" as a parameter as well.

The intention of this document is to make us aware for having ASEP tests more in line with the real use, what we have to focus. The ASEP procedure must be the same everywhere and any information is valuable to have ASEP as universal solution.***CONCLUSION:*** * ***M.Xie should present a proposal with justification of their special needs***
* ***To be followed with next presentations***
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|  | **Model concept analysis including partial throttle :** * **Full vehicle noise (prop, tyre, …)**
* **Others?**
* **Model base or Not-to-exceed for limit?**
 | ASEP-04-02ASEP-04-06 |
| * **OICA - ASEP-04-02**

Hans-Martin Gerhard presented a document to think about the ASEP strategy in the future:* What is the intention and the scope of ASEP?
* What do we really want to achieve?
* Proposal for a road map for the revision of ASEP
* Reflections on demands of Germany on ASEP because ASEP is requested to become mandatory for Type Approval and for the Conformity of Production with 2 possible ways for its construction according to the limited or wide control range. Especially because we cannot avoid the defeat devices and the interpretation of what device could be a defeat device.

Answer of OICA which suggests to focus in a first step on the development of an ASEP test applicable to any driving situation.* OICA position on the revision of ASEP and new ASEP concept:
* Essential requirements.

It is reminded we need to have a neutral efficient method as simple as possible, as precise as possible.* Additional requirements.

We have to admit current systems are not really enough safe against manipulation because easy access to system or software. Something should be done to make OEMs have to design their system to avoid any manipulations.* Evaluation of the actual ASEP assessment
* Suggestions
* ASEP application scheme in line with the option 2 proposed by Germany.

Proposal for the construction of a principle for the sound model as a first step with its validation.* Set up of a test program to collect necessary additional data and evaluations accordingly with the need to correct and update the current database available

The group supports this model because:* it supports simplification approach
* it is not completely new, very familiar
* it is technically correct
* it could be applied to all situations
* It should reduce the workload

Some concerns:* Comparison with the current method to be integrated
* Need of more data for the partial throttle
* Parameters based on experience to be cross-checked with additional data
* How to test this ASEP?

The group agreed to use this model as starting point and to work on this model in a first step (and not on the limits). What could we provide to validate the model?A revision 1 of this document ASEP-04-02 will be provided.To be followed with next presentation ASEP-04-06.* **OICA - ASEP-04-06**

Hans-Martin Gerhard explained the excel sheet with data from 2007 collection with the exploitation of this data - colored sheet per gear data.For the time being, this document has no partial throttle data.***CONCLUSIONS: A revision 1 of this document will be provided. See paragraph 7 for the next homework to be done.*** |
|  | **Tests to be performed, database** | ASEP-04-05ASEP-04-03ASEP-04-04 |
| * **OICA - ASEP-04-03**

Hans-Martin Gerhard explained the excel sheet he suggested to collect and utilize the additional data in line with the ASE-04-06 presented under the previous paragraph 6.With these data we should be able to see if vehicles are inside or outside the proposed model. Then we will be able to compare the models and to work with the models.Behind these parameters we need to know what has to be done in addition, to adjust and to understand the system. This is especially important to make understandable the model for the Contracting Parties.According to the discussions, it is proposed to add in the excel sheet ‘VehData’ information to know how exactly is the vehicle tested as:* tyres dimensions,
* cross vehicle mass,
* ambient conditions as range of temperature,
* parameters on variable geometry
* active system after the out-valve of the engine, before the cleaning system
* either active sound system and/or active exhaust system anything after the exhaust gas cleaning system
* diesel/ petrol/ hybrid/ battery electric with one additional column
* modes (each mode will create a new line)
* pre-acceleration point (just the length)
* engine and vehicle speed at Lmax
* …

A revision 1 of this document will be provided accordingly.**The group has found an agreement on which data have to be collected.** Discussions to be followed with the test plan. See next presentation with ASEP-04-05.* **OICA - ASEP-04-05**

This document to propose a test program to collect additional data of vehicles is presented by Hans-Martin Gerhard.It would be useful to have more vehicles with automatic transmission.Tests for ASEP assessment: for each gear ratio we need the acceleration and the cruise tests. The data should be saved as for Type-Approval. The model is strictly based on type-approval with validated data.Remarks: * for gear/gear ratio selection: a same vehicle can be used for instance first one for gear with locked transmission and again in Drive mode unlocked,
* not all modes to be done but modes for instance because of significant differences
* acceleration: if possible to be made 2 different partial throttles
* offer the possibility to use already available data if any
* additional data for assessment model

**According to the discussions of the group a revision 1 of this document will be provided.*** **OICA - ASEP-04-04**

Hans-Martin Gerhard presented a picture for stationary sound emission test with position of microphones.The chair thanked especially Hans-Martin Gerhard for the job he provided which will be very helpful for the group.***CONCLUSION: these 3 revised documents will be used for requesting from OEMs and Contracting Parties their support to be able to collect additional data for a complete new assessment system.*** |
|  | **In general application of ASEP, principle of additional point randomly chosen, categories exemption, comparison between current/future methods** | ASEP-04-13 |
| Some comparison between current and future methodsTo discuss about additional point randomly, we first have to consolidate our knowledge and experience with future method.Comparison between current/future methods: the same database exists already with the same structure as the new one – Hans-Martin Gerhard proposed to share his database and if enough time he will add the Lurban method too 🡪 document ASEP-04-13 (*document not available during the meeting but shared after the meeting*). |
|  | **Any Other Business** | ASEP-04-08ASEP-04-09 |
| * **OICA - ASEP-04-08**

Louis-Ferdinand Pardo presented this document in order to provide the GRB experts a possible approach for incorporating the revision of ASEP into the Regulation. This is a compilation of information to GRB experts and resume what happens on ASEP and to have a follow-up of the works of the IWG ASEP. This document is very complete but too dense and long to be used directly in GRB. It will be used to built the status report to GRB.***CONCLUSIONS: The group supports to keep this good job for the next meeting if useful according to the outcome of the next GRB.**** **OICA - ASEP-04-09**

Louis-Ferdinand Pardo presented the draft of report for the next session of GRB.According to the discussions this document has been corrected during the meeting 🡪 See Revision 1.***CONCLUSION:*** * ***this revision 1 of ASEP-04-09 will be sent as informal document to the secretary of the GRB*.**
* ***GRB*-64-23 Terms of Reference have to be updated accordingly**
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|  | **Next meeting(s)** |  |
| * Japan - November 07-09, 2017
* For November session, it would be nice to have results of 1st vehicles and also 1st ‘new’ vehicles (hybrid, automatic transmission, …) from various parties
* ASEP should be discussed also with IMMA because of some potential interests for having the same principle of test
* Geneva – January 22 pm – 24 am, 2018
* This meeting should be a good time to have a look on the model and more or less to validate the model and confirm what additional data would be useful
* China – during the week on March 19-23, 2018 (*new dates in comparison with those proposed during the 4th session for the 2nd week of April 2018*) 🡪 dates to be confirmed and specified
* Europe – during the week on July 09-13, 2018 🡪 dates to be specified
* Geneva – September 10 pm -12 am, 2018 🡪 to be confirmed
* Japan – during the week on November 05-09, 2018
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|  | **Adjourn** |  |
| Mr.Pardo thanked all participants for their fruitful contribution and closed the meetings. |

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All documents of this IWG ASEP will be available via the UNECE website:

<https://www2.unece.org/wiki/pages/viewpage.action?pageId=2523476>