



Economic and Social Council

Distr.: General
4 March 2020

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Pollution and Energy

Eightieth session

Geneva, 14-17 January 2020

Report of the Working Party on Pollution and Energy (GRPE) on its eightieth session

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I. Attendance

1. The Working Party on Pollution and Energy (GRPE) held its seventy-ninth session from 21 to 24 May 2019, with Mr. A. Rijnders (Netherlands) as Chair and Duncan Kay (United Kingdom of Great Britain and Northern Ireland) as Vice Chair. Experts from the following countries participated in the work following Rule 1(a) of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690, as amended): Australia, Austria, Canada, China, Czech Republic, France, Germany, Hungary, India, Italy, Japan, Netherlands, Norway, Poland, Republic of Korea, Russian Federation, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland (UK) and United States of America. Experts from the European Commission (EC) also participated. Experts from the following non-governmental organizations (NGOs) took part in the session: Association for Emissions Control by Catalyst (AECC), International Motor Vehicle Inspection Committee (CITA), European Association of Automobile Suppliers (CLEPA/MEMA/JAPIA), European Garage Equipment Association (EGEA), European Association of Internal Combustion Engine Manufacturers (EUROMOT), International Motorcycle Manufacturers Association (IMMA), International Organization of Motor Vehicle Manufacturers (OICA) and Liquid Gas Europe.

II. Adoption of the agenda (agenda item 1)

Documentation: ECE/TRANS/WP.29/GRPE/2020/1
Informal documents GRPE-80-01-Rev.2, GRPE-80-02 and
GRPE-80-06-Rev.4

2. Mr. Rijnders, Chair of GRPE, opened the meeting and welcomed the participants. GRPE adopted the provisional agenda of the eightieth session (ECE/TRANS/WP.29/GRPE/2020/1), as updated and consolidated in GRPE-80-06-Rev.4. GRPE took note of GRPE-80-01-Rev.1 on the organization of GRPE Informal Working Group (IWG) meetings held during the week.

3. The informal documents distributed before and during the GRPE session are listed in Annex I. Annex II lists the informal meetings held in conjunction with this GRPE session. Annex III lists IWGs of GRPE, task forces and subgroups, giving details on their Chairs, Secretaries and the end of their mandates.

4. The secretariat introduced GRPE-80-02, announcing that the next GRPE session would take place on from 9 to 12 June 2020 and recalling the corresponding deadline (17 March 2020) for the submission of official documents. The Chairs and Secretaries of IWGs were invited to approach the secretariat to define the calendar of IWGs meetings for the June 2020 GRPE session. The secretariat also reminded all participants, including those in possession of long duration badges, to please register in order to appear on the list of participants.

III. Report on the last session of the World Forum for Harmonization of Vehicle Regulations (WP.29) (agenda item 2)

Documentation: ECE/TRANS/WP.29/1147 and ECE/TRANS/WP.29/1149
Informal documents GRPE-80-03 and GRPE-80-15-Rev.1

5. The secretariat introduced GRPE-80-03 and reported on relevant items discussed during the 178th and 179th session of the World Forum for Harmonization of Vehicle Regulations (WP.29). He referred to ECE/TRANS/WP.29/1147 and ECE/TRANS/WP.29/1149 for further details.

6. WP.29 reverted ECE/TRANS/WP.29/2019/120 to each GRs to propose amendments for the March 2020 session of WP.29. The Chair introduced GRPE-80-15-Rev.1 proposing amendments to ECE/TRANS/WP.29/2019/120 on road side inspections.

7. GRPE adopted GRPE-80-15-Rev.1 as amended by Annex IV and requested the secretariat to submit Annexes IV to WP.29 for consideration at its March 2020 session as informal document WP29-180-06.

IV. Light vehicles (agenda item 3)

A. UN Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M₁ and N₁ vehicles), 101 (CO₂ emissions/fuel consumption) and 103 (Replacement pollution control devices)

Documentation: ECE/TRANS/WP.29/GRPE/2020/2,
ECE/TRANS/WP.29/GRPE/2020/3,
ECE/TRANS/WP.29/GRPE/2020/4,
ECE/TRANS/WP.29/GRPE/2020/5 and
ECE/TRANS/WP.29/GRPE/2020/6
Informal documents GRPE-80-07, GRPE-80-08, GRPE-80-10,
GRPE-80-16, GRPE-80-18-Rev.1, GRPE-80-24, GRPE-80-37,
GRPE-80-38 and GRPE-80-39

8. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2020/2 superseded by GRPE-80-07 correcting references and streamlining the definition of mono-fuel gas vehicles. The representatives from Italy, the Netherlands and France supported the proposal. GRPE adopted the proposal to amend the 06 and 07 series of amendments to UN Regulation No. 83, as amended by Annex V.

9. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2020/5, as amended by GRPE-80-08 and GRPE-80-16. Those documents introduced new definitions and clarified 'permanent emission default mode' of OBD systems. GRPE adopted the proposal to amend the 06 and 07 series of amendments to UN Regulation No. 83, as amended by Annex VI.

10. The representative from OICA introduced GRPE-80-18-Rev.1 allowing the usage of alternative road load power determination techniques, which have been derived from those determined in UN GTR No. 15 and UN Regulation on WLTP, to amend the 06 and 07 series of amendments to UN Regulation No. 83. GRPE adopted the proposal to amend the 06 and 07 series of amendments to UN Regulation No. 83, as amended by Annex VII.

11. GRPE endorsed the three proposals to amend the 06 and 07 series of amendments to UN Regulation No. 83 and requested the secretariat to submit Annexes V, VI and VII to WP.29 and AC.1 for consideration and vote at their June 2020 sessions as draft Supplements 14 and 11 to the 06 and 07 series of amendments to UN Regulation No. 83 respectively.

12. The representative from OICA introduced ECE/TRANS/WP.29/GRPE/2020/6 allowing the usage of alternative road load power determination techniques, which have been

derived from those determined in UN GTR No. 15 and UN Regulation on WLTP, to amend the 01 series of amendments to UN Regulation No. 101. The representative from Australia supported the proposal and the principle to help countries that have not yet finalized the transition to WLTP. GRPE adopted the proposal to amend the 01 series of amendments to UN Regulation No. 101, as amended by Annex VIII.

13. GRPE requested the secretariat to submit Annex VIII to WP.29 and AC.1 for consideration and vote at their June 2020 sessions as draft Supplement 9 to the 01 series of amendments to UN Regulation No. 101.

14. The representatives from the European Commission (EC), Chair of the IWG on WLTP and drafting coordinator, introduced GRPE-80-24 and GRPE-80-37 on the status report of the IWG on WLTP and the steps achieved to finalize the transposition of UN GTR No. 15 into a new UN Regulation. The Chair of the IWG on WLTP highlighted the progress made and impressive achievements of the last 10 years aiming at global harmonization, taking into consideration the fragmented world at that time. He emphasized all stakeholders involved had put considerable amount of resources to reach the best possible results into the work that was fully back by GRPE and WP.29 over the years. The Chair expressed its deepest appreciation to the tremendous efforts that have been delivered into developing WLTP-related legislative activities with the full support from GRPE and WP.29, and also during the session to finalize the documents on time for a consideration by GRPE.

15. The Chair of the IWG on WLTP explained the steps and approaches adopted in the 00 and 01 series of amendments to the new UN Regulation on WLTP so that GRPE better understand the Level 1a, Level 1b and Level 2 included in the UN Regulation. The representative from Germany found this explanation very helpful and asked if a guidance document or an explanatory note would be developed to assist the users of UN Regulation on WLTP to go through the large document. The representative from OICA volunteered to draft a first version of such document that would be reviewed by the IWG on WLTP.

16. The representative from Australia requested guidance on the process to notify which version of the legislation the country would apply. The secretariat informed GRPE that Revision 3 of the 1958 Agreement stipulates that a new UN Regulation enters into force for all Contracting Parties that have not notified the Secretary-General of their objection within six months after the notification. He added that the levels a Contracting Party wishes to accept should be defined in their national legislation.

17. The representative from India required some clarifications about the approval process for Off vehicle Charge Fuel Cell Hybrid Vehicles (OVC-FCHV) and mono fuel gas vehicles. The representative from EC informed OVC-FCHV are outside of the scope of the 01 series of amendments to the new UN Regulation and provisions for mono fuel gas vehicles are more stringent in Level 2, taking the level 1B provisions that are more stringent than in Level 1A where there is no prescription on evaporative emissions.

18. The representative from EC, drafting coordinator of the Transposition Task Force introduced ECE/TRANS/WP.29/GRPE/2020/3 and ECE/TRANS/WP.29/GRPE/2020/4 amended by GRPE-80-38 and GRPE-80-39 respectively. GRPE adopted the proposal to create a new 00 and 01 series of amendments to a new UN Regulation, as amended by Addendum 1 and Addendum 2.

19. GRPE requested the secretariat to submit Addendums 1 and 2 to WP.29 and AC.1 for consideration and vote at their June 2020 sessions as draft 00 and 01 series of amendments to new UN Regulation No. [XXX] on WLTP respectively.

20. The representative from CITA introduced GRPE-80-10 proposing amendments to the 07 series of amendments to UN Regulation No. 83. He also introduced GRPE-80-11 and GRPE-80-12 that are of similar content proposing to amend UN Regulations Nos. 24 and 96 respectively. All three proposals sought to improve the design of vehicles to make tampering of emissions systems more difficult and to facilitate its detection. The representatives from Italy, the United Kingdom of Great Britain and Northern Ireland and EC highlighted the importance and relevance of the topic and required more time and deeper impact assessments to gauge the potential consequences of such new provisions.

21. The representative from Australia wondered why as the representative of CITA not proposed amendments to UN Regulation No. 49 along the same lines and asked if all the proposals might be tackled as a whole for all vehicle types. The representative from CITA explained that GRPE-80-10, GRPE-80-11 and GRPE-80-12 represented a first step and the other UN Regulations would be looked after at a later stage.

22. The representative from Euromot reiterated that all technical changes require a technical assessment and that in the case of Non-Road Mobile Machinery (NRMM) engines, many principles detailed in the proposal from CITA were already addressed today (e.g. on software version and emission control system). The representative from CITA welcomed this statement and the comments received and he stated CITA will further work to improve those proposals.

23. The representative from the Netherlands requested CITA to especially further elaborate the justification part of the proposals to include for example root-cause assessment and/or cost/benefit analysis to better understand what CITA wants to achieve and to assess the effectiveness of the proposals. The representative from EC highlighted the consensus from all stakeholders that the issue of tampering prevention is important and urgent but that further discussions would be required, for example in a dedicated group to work in-depth on the topic. The Chair confirmed the sense of importance especially with the risk that tampering is undermining all the efforts made at type approval.

24. The representative from OICA agreed the issue needed to be looked at and encouraged not to place all the burden on car manufacturers and to have a holistic view, for example by looking at new tools to analyse environmental performance on a more regular basis and by complementing the administrative provisions.

25. GRPE agreed to keep the topic on the agenda and to create a dedicated agenda item on lifetime compliance from the next session of GRPE in June 2020. GRPE also agreed to invite a representative from GRVA to share the latest progress on the work of the Task Force on Cyber Security and Over The Air (OTA) software updates (CS/OTA) operating under the auspices of GRVA, on Integration of Regulation X Software Identification Number (RxSWIN).

B. UN Global Technical Regulations Nos. 15 on Worldwide harmonized Light vehicles Test Procedures (WLTP) and 19 (Evaporative emission test procedure for the Worldwide harmonized Light vehicle Test Procedures (WLTP EVAP))

Documentation: ECE/TRANS/WP.29/2020/7
Informal documents GRPE-80-34, GRPE-80-35 and GRPE-80-40

26. The representative from EC, drafting coordinator for WLTP activities, introduced ECE/TRANS/WP.29/2020/7, as amended by GRPE-80-34, as draft Amendment 3 to UN GTR No. 19, together with its technical report (GRPE-80-35). He detailed most of the amendments in the proposal are a consequence of the transposition process and the inclusion of UN GTR No. 19 into the new UN Regulation on WLTP.

27. GRPE adopted ECE/TRANS/WP.29/GRPE/2020/7 and GRPE-80-34 as amended by Addendum 3 to this report. GRPE also adopted the technical report (GRPE-80-35) as reproduced in Annex IX. GRPE requested the secretariat to submit Addendum 3 and Annex IX to WP.29 and Executive Committee of the 1998 Agreement (AC.3) for consideration and vote at their June 2020 sessions as draft Amendment 3 to UN GTR No. 19.

28. The representative from EC drafting coordinator for WLTP activities, introduced GRPE-80-40 introducing the status of the development of draft Amendment 6 to UN GTR No. 15. The new elements expected in the next amendment to UN GTR No. 15 were briefly introduced with updated provisions and new annexes deriving from the latest activities of the IWG on WLTP. GRPE acknowledged the progress made and showed appreciation for the work done and still pending.

29. GRPE noted the request for a meeting room for one day and a half during the GRPE week in June 2020.

C. Worldwide harmonized Real Driving Emissions test procedure

Documentation: Informal documents GRPE-80-29, GRPE-80-30 and GRPE-80-31

30. The representative from EC introduced GRPE-80-29 detailing the latest activities from IWG on RDE. She invited all stakeholders to consult GRPE-80-30 and GRPE-80-31 and to comment the draft UN GTR and UN Regulation on RDE. The representative from India requested more details on the timeline for the UN GTR and UN Regulation. The representative from EC commented that both UN GTR and UN Regulation are expected to be proposed simultaneously at the next session of GRPE in June 2020. The representative from Australia requested clarifications about the arrangements for obtaining an approval under the proposed UN Regulation, that contained one test with two methods. He asked if both methods would need to be passed successfully to get an approval. The representative from EC answered that indeed both methods would need to be passed and was happy to have found a common denominator with all stakeholders involved for most of the provisions in the UN Regulation.

31. The secretariat noted that some elements in the draft UN GTR are left to contracting parties to decide. He asked whether those elements are expected to be harmonized and to be tackled in the phase 2 activities of the UN GTR development. The representative from EC clarified that such elements might be removed in the next phase of the UN GTR development to streamline the next amendment of the UN GTR. The representative from OICA expressed his appreciation to the level of harmonization achieved in such a tight timeframe.

32. The Chair expressed his gratitude and appreciation to all the efforts made and reckoned the challenges to reach full harmonization given the complexity of the emission legislation files.

33. GRPE noted the request for a meeting room for half a day during the GRPE week in June 2020.

V. Heavy duty vehicles (agenda item 4)

A. UN Regulations Nos. 49 (Emissions of compression ignition and positive ignition (LPG and CNG) engines) and 132 (Retrofit Emissions Control devices (REC))

34. GRPE had not received any new proposals for discussion under this agenda item.

B. UN Global Technical Regulations Nos. 4 (World-wide harmonized Heavy Duty Certification procedure (WHDC)), 5 (World-Wide harmonized Heavy duty On-Board Diagnostic systems (WWH-OBD)) and 10 (Off-Cycle Emissions (OCE))

Documentation: Informal document GRPE-80-25

35. The representative from OICA introduced GRPE-80-25 containing draft amendments to UN GTR No. 4, mainly correcting errors found in some formulas in the latest version of the text. GRPE welcomed the proposal and was looking forward to receiving a working document at the next session of GRPE in June 2020.

C. Worldwide provisions for Heavy Duty vehicles Fuel Economy

Documentation: Informal document GRPE-80-26

36. The expert from OICA introduced GRPE-80-26 summarizing the outcome of the Heavy Duty Fuel Economy (HDFE) workshop held earlier during the GRPE week. He highlighted there is continuous interest from contracting parties on the topic of harmonization

of HDPE, but that, to date, no contracting parties were in the position to sponsor the creation of a new IWG on the issue.

37. The Chair confirmed that the situation, where there is interest to work on a topic but no resources are available, was unfortunate. He welcomed the proposal from OICA to have an ad-hoc group open to all interested parties to work on the development of harmonized guidance provisions that could then be considered by GRPE. He requested more information about the timeframe for the initiation of those activities. The representative from OICA highlighted that a more detailed planning will be developed in due course and assistance from the secretariat would be sought to share the information with GRPE.

VI. UN Regulations Nos. 24 (Visible pollutants, measurement of power of C.I. engines (Diesel smoke)), 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems), 133 (Recyclability of motor vehicles) and 143 (Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS)) (agenda item 5)

Documentation: ECE/TRANS/WP.29/GRPE/2020/8,
Informal documents GRPE-80-11 and GRPE-80-20

38. The expert from OICA informed GRPE that OICA withdrew ECE/TRANS/WP.29/GRPE/2020/8 from consideration by GRPE. A recent better understanding of the issue following informal discussions with various stakeholders showed the proposal needed to be reconsidered.

39. The representative from CITA introduced GRPE-80-11 together with GRPE-80-10 and GRPE-80-12, as all documents were of similar nature (see para. 20).

40. The representative from Liquid Gas Europe introduced GRPE-80-20 correcting errors in ECE/TRANS/WP.29/2019/45. The representative from Italy agreed ECE/TRANS/WP.29/2019/45 contained some errors that needed to be addressed in the fastest way possible by the secretariat. The secretariat submitted GRPE-80-20 as ECE/TRANS/WP.29/2020/49 as a Proposal for Corrigendum 1 to Supplement 8 to UN Regulation No. 115 (LPG and CNG retrofit systems) that was to be considered by WP.29 and AC.1 at their March 2020 sessions.

VII. Agricultural and forestry tractors, non-road mobile machinery (agenda item 6)

A. UN Regulations Nos. 96 (Diesel emission (agricultural tractors)) and 120 (Net power of tractors and non-road mobile machinery)

Documentation: Informal document GRPE-80-12

41. The representative from CITA introduced GRPE-80-12 together with GRPE-80-10 and GRPE-80-11, as all documents were of similar nature (see para. 20).

B. UN Global Technical Regulation No. 11 (Non-road mobile machinery engines)

42. GRPE did not receive any new proposal to amend UN GTR No. 11.

VIII. Particle Measurement Programme (PMP) (agenda item 7)

Documentation: Informal document GRPE-80-13 and GRPE-80-28

43. The representative from the EC, chair of the IWG on PMP, introduced GRPE-80-28, presenting a status report of the activities of the IWG on PMP since the last session of GRPE. The Chair requested more information on the new provision to measure sub-23 nm particulates and if those new provisions expected to be submitted as a working document for the next session of GRPE in June 2020 would be submitted as amendments to both UN GTR No. 15 and UN Regulation No. [XXX] on WLTP. The representative from EC clarified this was still being considered where those new provisions would be implemented.

44. Regarding tyre wear emissions, the representative from Russia asked whether the different types of tyres tested meant difference in purpose (summer versus winter tyres) and / or different brands. The Chair of the IWG on PMP clarified the focus was on different abrasion rates, and on particulate size distribution, as the correlation between abrasion rates, particulates number and particulate size is not linear and still needed to be further defined.

45. The representative from India required more information on the cut-off point to have effective 10 nm particulate size measurements, especially for natural gas vehicles, which in India, had peak particulate emission at around 10nm. He also wondered about any potential impact of sampling point position on PN measurement. The Chair of the IWG on PMP said the cut-off was to be set at around 7nm where a 50% efficiency had been measured. He said lowering this threshold implied high levels of artefacts measurements. For natural gas vehicles, further investigation were necessary to measure particulates below 10 nm with good efficiencies. He finally highlighted that there are three research programs going on under the H2020 funding scheme of the EU that might bring new information and confirmed that at this stage no impact had been noted on the sampling point location.

46. The representative from Russia introduced GRPE-80-13 showing the importance of tyre and road wear emissions into the non-exhaust particulate emission mix. The report of the Russian Federation presented the comparative results of PM emissions from various vehicle systems, which were characterized by the following correlation: 28% with exhaust gases, 7% from braking systems, 12% from tyres and 53% from roadway, according to the materials of the research conducted in the Russian Federation and the UK. On this basis, He expressed the necessity for the tyre manufacturers and road construction services to revise the existing production technologies for tyres and roadway and to consider new materials and technologies to minimize the use of materials containing highly hazardous cancerogenic substances to improve health of population in large cities and elsewhere.

47. The representative from the Netherlands asked if the sources of particulate emission from transport were compared with other sources. The representative from Russia said there is research underway to have a broader look at all sources of emissions and that national inventories were performed at the national level that are providing information about the source of particulate emissions for the main sectors.

48. The representative from Australia highlighted that tyre and road wear emissions also highly depended on road surface technology and wondered if the results presented by Russia had been shared with the World Road Association. The representative from Russia replied that this information was now shared with WP.29 and that road associations were also collaborating with the World Health Organization (WHO) on those issues. The Chair welcomed the emergence of those issues to better understand the importance of the various sources of emissions and encouraged to further share such outcomes and inform all relevant stakeholders.

49. The Chair of the IWG on PMP asked if the study from Russia also looked at the particulate size distribution, as some literature seemed to indicate road and tyre wear particulate size were quite large. The representative from Russia agreed road wear particulate size was typically above 100 nm, but that many studies including the one from Russia considered small particulates in their findings.

50. GRPE acknowledged the progress made by IWG on PMP and noted no room had been requested for the GRPE week in June 2020.

IX. Motorcycles and mopeds (agenda item 8)

A. UN Regulations Nos. 40 (Emission of gaseous pollutants by motorcycles) and 47 (Emission of gaseous pollutants of mopeds)

51. GRPE did not receive any new proposal to amend UN Regulations Nos. 40 and 47.

B. UN Global Technical Regulations Nos. 2 (World-wide Motorcycle emissions Test Cycle (WMTC)), 17 (Crankcase and evaporative emissions of L-category vehicles) and 18 (On-Board Diagnostic (OBD) systems for L-category vehicles)

Documentation: Informal document GRPE-80-32

52. The Chair of IWG on Environmental and Propulsion Performance Requirements for L-category vehicles (EPPR) introduced GRPE-80-32 containing a draft Amendment 1 to Un GTR No. 18 together with the EPPR status report (GRPE-80-27, see para. 53).

C. Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles

Documentation: Informal document GRPE-80-27

53. The Chair of IWG on EPPR presented a status report (GRPE-80-27). He updated GRPE on the progress of IWG and introduced the upcoming activities of the group with a draft new timeline going until 2026. The representative from the Netherlands asked if the plan to work on propulsion unit performance would include electrified powertrain. The Chair of the IWG on EPPR confirmed that it would be the case.

54. The representative from India also added the new plans for EPPR activities would be closely looking at all L categories, included three- and four-wheelers in their forthcoming activities. The Chair congratulated the IWG on EPPR for their intense activities and the approach adopted to develop new texts.

55. GRPE acknowledged the progress made by IWG on EPPR and noted the request for a meeting room for one day during the GRPE week in June 2020.

X. Electric Vehicles and the Environment (EVE) (agenda item 9)

A. UN GTR on the Determination of Electrified Vehicle Power (DEVP)

56. No dedicated document on the development of the UN GTR on DEVP was presented to GRPE. An update on the development of the draft new UN GTR was included in GRPE-80-36 (see para. 0).

57. The Chair reminded that a draft UN GTR on DEVP was expected in January 2020. The Chair of the IWG on EVE said a draft UN GTR was available upon request and that the timeline to deliver a working document in time for the June session of GRPE remained unchanged.

58. The representative from India requested further information on the validation process of Test Procedure 1 (TP1) and Test Procedure 2 (TP2) in the draft UN GTR on DEVP, further asking whether TP1 and TP2 would remain equivalent when new hybrid powertrains architecture would be released on the market. The Chair of the IWG on EVE confirmed that the UN GTR on DEVP was written in such a way that provisions are not architecture-specific and should remain valid for all potential hybrid powertrain architecture types. The representative from OICA requested further details about the vehicle categories included in the scope of the draft UN GTR on DEVP. The Chair of the IWG on EVE highlighted that all

the development and validation work had been done for light-duty vehicles, and that there had been no in-depth consideration of heavy-duty vehicles. He nevertheless presumed that the provisions drafted in the UN GTR would be valid for both light-duty and heavy-duty vehicles.

B. Other activities of IWG on EVE

Documentation: Informal documents GRPE-80-36 and GRPE-80-41

59. The Chair of IWG on EVE presented the status report introducing the latest activities of the group (GRPE-80-36). He highlighted the major progress made on battery durability during the last meeting of the IWG on EVE. He requested GRPE to consider GRPE-80-41 as draft request for authorization to develop a new UN GTR on in-vehicle battery durability, as amended in Annex X.

60. The representative from OICA noted that the timeline in GRPE-80-41 had changed to deliver a first draft of the new UN GTR on in-vehicle battery durability and sought further information. The Chair of the IWG on EVE clarified a more aggressive timeline was agreed within the IWG on EVE taking into account the urgency of the issue and also bearing in mind that the topic is new and most provisions would need to start from a blank sheet as there is no precedent and no national legislation on this topic. The representative from OICA confirmed that developing new methods for simplified in-service conformity of battery durability might be challenging. The Chair of the IWG on EVE suggested existing range determination approaches might be used as a proxy for battery deterioration.

61. GRPE adopted the proposal to request authorization for a new UN GTR on in-vehicle battery durability and requested the secretariat to submit Annex X to WP.29 and AC.3 for consideration and vote at their June 2020 sessions as draft request for authorization to develop a new UN GTR on in-vehicle battery durability.

62. The Chair of the IWG on EVE finally thanked the secretariat for organizing a meeting with the leadership team of the Group of Experts on Energy Efficiency (GEEE) and the representatives of the Geneva region to initiate joint activities on the method to state energy consumption of EVs.

63. GRPE acknowledged the progress made by IWG on EVE and noted the request for a meeting room for one day during the GRPE week in June 2020.

XI. Mutual Resolution No. 2 (M.R.2) (agenda item 10)

64. GRPE had not received any new proposals for discussion under this agenda item.

XII. International Whole Vehicle Type Approval (IWVTA) (agenda item 11)

Documentation: Informal documents GRPE-80-09 and GRPE-80-14

65. The expert from OICA, ambassador of GRPE at IWVTA also looking at the matters of the Database for Exchange of Type Approvals (DETA), introduced GRPE-80-09 showing the latest progress in the deployment of DETA. Another representative from OICA requested information on the notification process for manufacturers and employees changing assignments. The secretariat confirmed the DETA administrators should be contacted to provide updated and ensure uninterrupted access to DETA. The secretariat also notified GRPE that a full answer from the UN General Assembly resolution on the request to host DETA under UN regular budget would be provided during the next session of WP.29 in March 2020.

66. The ambassador of GRPE at IWVTA also introduced GRPE-80-14 on the latest activities of the IWG on IWVTA. He highlighted some cases of potential misinterpretation on the transitional provisions with concrete examples related to GRPE. GRPE noted the progress from IWGs on DETA and IWVTA and thanked the ambassador for his implication.

XIII. Vehicles Interior Air Quality (VIAQ) (agenda item 12)

Documentation: Informal documents GRPE-80-21, GRPE-80-22 and GRPE-80-23

67. The Chair of IWG on Vehicles Interior Air Quality (VIAQ) presented a status report on the ongoing activities of the group (GRPE-80-23). He also encouraged GRPE to review and provide comments and feedback on the draft Revision 1 to Mutual Resolution No. 3 (GRPE-80-21 and GRPE-80-22). He informed about on-going collaboration and information exchange with other groups working on vehicle interior air quality measurement procedures.

68. The representative from OICA asked if a Round Robin tests had been carried to confirm the draft Revision 1 to M.R.3 works and is practical. The Chair of IWG on VIAQ confirmed some tests in different facilities showed good correlation between the results.

69. GRPE acknowledged the progress made by IWG on VIAQ and noted no room had been requested for the GRPE week in June 2020.

XIV. Priority topics for GRPE activities (agenda item 13)

Documentation: Informal documents GRPE-80-04-Rev.1 and GRPE-80-05-Rev.3

70. The Chair introduced GRPE-80-04-Rev.1 as the GRPE list of emission topics that GRPE would regularly discuss and may decide to work on if and when resources are available. He reminded this list did not constitute a declaration of intent that the topics included would be tackled by GRPE in the future. He also recalled that keeping such a list open and regularly updated would allow GRPE to be more reactive when new issues arose and ready to cover new topics when pertinent. He reiterated GRPE-80-04-Rev.1 was to remain an GRPE internal document for its own use and information.

71. The representative from OICA requested more information about brake wear emissions topics and how to tackle this topic and by which GR. He also asked whether a more extensive definition of geofencing was available. The representative from EC thought brake emissions would preferably be considered at a vehicle scale and would preferably be considered in GRPE. The Chair emphasized that there would be close cooperation with other GRs working on brake issues, and confirmed GRPE was the appropriate GR to develop the new provisions on brake wear emissions.

72. The representative from India requested more clarity about the destination of the potential items, whether UN Regulation or UN GTR. The Chair clarified that the emission topic list was a starting point and its aim was not to contain any prescription on to which agreement each topic would go.

73. The representative from Spain asked whether the inclusion of life cycle analysis was referring to all vehicle and energy types. The Chair replied that life cycle analysis was still a nascent activity where legislative pathway still had to be defined. New energy types for vehicles needed to have a broad coverage, and he felt GRPE was not in a position to work on this yet.

74. The Chair introduced GRPE-80-05-Rev.2 as the draft list of priority for GRPE that WP.29/AC.2 requested each GR to send so that the coordination of tasks could be better overseen by WP.29/AC.2.

75. The representative from the Netherlands thanked the Chair for putting together this list and insisted that cars were more and more becoming computers on wheels and that vehicles would therefore evolve over their lifetime through software updates for example and that the issue of lifetime compliance was of high importance in his view.

76. The representative from the United Kingdom of Great Britain and Northern Ireland insisted tyre wear particulates and heavy duty hybrids were two areas of particular concern for his country and was happy to see those topics reflected in the list.

77. GRPE adopted GRPE-80-05-Rev.2 as amended during the session and requested the Chair and secretariat to send it to WP.29 secretariat for further consideration by WP.29/AC.2.

XV. Election of Officers (agenda item 14)

78. The Chair informed GRPE that an application from Mr. Duncan Kay from the United Kingdom of Great Britain and Northern Ireland had been received. He requested GRPE to run an election of vice-chair at the beginning of the session as GRPE had been without a Vice-Chair for a long period of time. GRPE agreed to run elections for a Vice-Chair.

79. The Chair asked GRPE whether there was any other application for becoming Vice-Chair. No other application were put forward. The Chair then requested GRPE to vote on Mr. Duncan Kay's application as Vice Chair for the year 2020.

80. GRPE elected Mr. Duncan Kay as Vice Chair for the year 2020.

XVI. Any other business (agenda item 15)

Documentation: Informal documents GRPE-80-19 and GRPE-80-33

81. The representative from the Republic of Korea introduced GRPE-80-19 presenting Case studies on analysis of light duty vehicle exhaust gas control signal in Korea. The Chair thanked the representative from Korea for his interesting presentation and welcomed national initiatives on vehicle emissions control measurements to be presented at GRPE.

82. The representatives from the United States of America introduced GRPE-80-33 detailing the process being put in place in the United States of America to update Federal legislation on pollutant emissions from heavy-duty vehicles. He highlighted some innovative approaches could be put forward in the new legislation that might be of interest to GRPE. The representative from EC confirmed a similar process was also taking place in the EU to develop a new Euro 7/VII emission standard.

83. The representative from OICA asked more details about the process leading to the legal text. The representative from the United States of America confirmed the team from the Environment Protection Agency (US EPA) were performing the technical assessment and would put forward recommendations and explained political leadership would then determine the appropriate new standard. The representative from the United States of America proposed to provide a full overview of the work performed during the next session of GRPE in June 2020.

XVII. Provisional agenda for the next session

A. Next GRPE session

84. The next GRPE session, including IWG meetings, is scheduled to be held in Geneva, Palais des Nations, starting on Monday, 8 June 2020, from 9.30 a.m. until Friday, 12 June 2020, at 5.30 p.m., subject to confirmation by the secretariat (see GRPE-80-01). Interpretation services would be provided from 9 June (2.30 p.m.) to 12 June (12.30 p.m.) 2020.

B. Provisional agenda for the next proper GRPE session

85. GRPE agreed on the following provisional agenda for its next session:

1. Adoption of the agenda.
2. Report on the last sessions of the World Forum for Harmonization of Vehicle Regulations (WP.29).
3. Light vehicles:
 - (a) UN Regulations Nos. 68 (Measurement of the maximum speed, including electric vehicles), 83 (Emissions of M₁ and N₁ vehicles), 101 (CO₂ emissions/fuel consumption), 103 (Replacement pollution control devices) and [XXX] (WLTP);

- (b) UN Global Technical Regulations Nos. 15 (Worldwide harmonized Light vehicles Test Procedures (WLTP)) and 19 (Evaporative emission test procedure for the Worldwide harmonized Light vehicle Test Procedure (WLTP EVAP));
 - (c) Worldwide harmonized Real Driving Emissions test procedure.
- 4. Heavy duty vehicles:
 - (a) UN Regulations Nos. 49 (Emissions of compression ignition and positive ignition (LPG and CNG) engines) and 132 (Retrofit Emissions Control devices (REC));
 - (b) UN Global Technical Regulations Nos. 4 (World-wide harmonized Heavy Duty Certification procedure (WHDC)), 5 (World-Wide harmonized Heavy Duty On-Board Diagnostic systems (WWH-OBD)) and 10 (Off-Cycle Emissions (OCE));
 - (c) Worldwide provisions for Heavy Duty vehicles Fuel Economy.
- 5. UN Regulations Nos. 24 (Visible pollutants, measurement of power of C.I. engines (Diesel smoke)), 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems), 133 (Recyclability of motor vehicles) and 143 (Heavy Duty Dual-Fuel Engine Retrofit Systems (HDDF-ERS)).
- 6. Agricultural and forestry tractors, non-road mobile machinery:
 - (a) UN Regulations Nos. 96 (Diesel emission (agricultural tractors)) and 120 (Net power of tractors and non-road mobile machinery);
 - (b) UN Global Technical Regulation No. 11 (Non-road mobile machinery engines).
- 7. Particle Measurement Programme (PMP).
- 8. Motorcycles and mopeds:
 - (a) UN Regulations Nos. 40 (Emission of gaseous pollutants by motor cycles) and 47 (Emission of gaseous pollutants of mopeds);
 - (b) UN Global Technical Regulations Nos. 2 (World-wide Motorcycle emissions Test Cycle (WMTC)), 17 (Crankcase and evaporative emissions of L-category vehicles) and 18 (On-Board Diagnostic (OBD) systems for L-category vehicles);
 - (c) Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles.
- 9. Electric Vehicles and the Environment (EVE);
 - (a) UN GTR on the Determination of Electrified Vehicle Power (DEVP);
 - (b) other activities of IWG on EVE.
- 10. Mutual Resolution No. 2 (M.R.2).
- 11. International Whole Vehicle Type Approval (IWVTA).
- 12. Vehicles Interior Air Quality (VIAQ).
- 13. Lifetime Compliance
- 14. Priority topics for GRPE activities
- 15. Election of officers
- 16. Any other business.

C. Informal meetings scheduled to be held in conjunction with the next GRPE session

86. The following informal meetings were scheduled to be held, subject to confirmation:

<i>Date</i>	<i>Group</i>	<i>Acronym</i>	<i>Time</i>
Monday, 8 June 2020	Worldwide harmonized Light vehicles Test Procedure	WLTP	9.30 a.m. – 12.30 p.m. 2.30 p.m. – 5.30 p.m.
	Electric Vehicles and the Environment	EVE	2.30 p.m. – 5.30 p.m.
Tuesday, 9 June 2020	WLTP Sub Group EV	SG EV	9.30 a.m. – 12.30 p.m.
	Electric Vehicles and the Environment	EVE	2.30 p.m. – 5.30 p.m.
	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR	2.30 p.m. – 5.30 p.m.
Wednesday, 10 June 2020	Global Real Driving Emissions	RDE	9.30 a.m. – 12.30 p.m.
	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR	9.30 a.m. – 12.30 p.m.

87. The agendas of these meetings will be prepared by the respective Technical Secretaries and distributed to the members of each group prior to each meeting.

Annex I

[English only]

List of informal documents (GRPE-80-) distributed without an official symbol before and during the session

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
1r2	(Secretariat) Informal meetings in conjunction with the GRPE (proper) session: schedule and rooms reservation	A
2	(Secretariat) General information	A
3	(Secretariat) Highlights of the WP.29 Sessions of June and November 2019	A
4r1	(Chair and secretariat) GRPE emission items list	A
5r3	(Chair) Priorities and Work by GRPE	B
6r4	(Secretariat) Provisional Annotated Agenda	A
7	(OICA) Revisions to ECE/TRANS/WP.29/GRPE/2020/2	B
8	(OICA) Revisions to ECE/TRANS/WP.29/GRPE/2020/5	B
9	(DETA) Status of the deployment of DETA	A
10	(CITA) Proposal to amend the 07 series of amendments to UN Regulation No. 83	C
11	(CITA) Proposal to amend the 03 series of amendments to UN Regulation No. 24	C
12	(CITA) Proposal to amend the 05 series of amendments to UN Regulation No. 96	C
13	(Russia) Current issues of ensuring human safety in process of vehicles operation	A
14	(IWVTA) IWVTA Ambassador report to GRPE 80	A
15	(Chair and vice chair) Proposed amendments to ECE/TRANS/WP.29/2019/120	B
16	(OICA) Amendments to ECE/TRANS/WP.29/GRPE/2020/5	B
17	(OICA) Draft proposal for amending errors in UN GTR No. 4	C
18r1	(OICA) Proposal for a new Supplement to 06 and 07 series of amendments to UN Regulation No. 83	B
19	(Republic of Korea) Case studies on analysis of light duty vehicle Exhaust gas control signal in Korea	A
20	(Liquid Gas Europe) Proposal for a new Corrigendum to UN Regulation No. 115 (Uniform provisions concerning the approval of LPG and CNG retrofit systems)	B
21	(VIAQ) Draft M.R.3 Revision 1	C
22	(VIAQ) Draft M.R.3 Revision 1 with track changes	C
23	(VIAQ) IWG on VIAQ status report	A
24	(WLTP) IWG on WLTP status report	A
25	(OICA) Draft proposal text for amending errors in UN GTR No. 4	C
26	(OICA) HDV FE workshop summary	A
27	(EPPR) IWG on EPPR status report	A
28	(PMP) IWG on PMP status report	A
29	(RDE) IWG on RDE status report	A
30	(RDE) draft UN GTR on Global RDE	C
31	(RDE) draft UN Regulation on Global RDE	C
32	(EPPR) Draft Amendment 1 to UN GTR No.18 : OBD2	C
33	(US) EPA Update on the Cleaner Trucks Initiative	A
34	(WLTP) Modifications to Amendment 3 to UN GTR No. 19	B
35	(WLTP) Technical Report to Amendment 3 to UN GTR No. 19	B
36	(EVE) IWG on EVE status report	A

<i>No.</i>	<i>(Author) Title</i>	<i>Follow-up</i>
37	(WLTP) Transposition to UN Regulation on WLTP status report	A
38	(WLTP) Amendments to ECE/TRANS/WP.29/GRPE/2020/3, the 00 series of amendments to UN Regulation on WLTP	B
39	(WLTP) Amendments to ECE/TRANS/WP.29/GRPE/2020/4, the 01 series of amendments to UN Regulation on WLTP	B
40	(WLTP) UN GTR No. 15 Amendment 6 status document	A
41	(EVE) request for authorization to develop a new UN GTR on in-vehicle battery durability	B

Notes:

- A Consideration by GRPE completed or to be superseded;
- B Adopted;
- C Further consideration on the basis of a revised proposal;
- D Distribute at the June 2020 session with an official symbol.

Annex II

[English only]

Informal meetings held in conjunction with the GRPE session

<i>Date</i>	<i>Group</i>	<i>Acronym</i>	<i>Time</i>
Monday, 13 January 2020	Electric Vehicles and the Environment	EVE	9.30 a.m. – 12.30 p.m.
	Particle Measurement Programme	PMP	2.30 p.m. – 5.30 p.m.
	Worldwide harmonized Light vehicles Test Procedure	WLTP	9.30 a.m. – 12.30 p.m. 2.30 p.m. – 5.30 p.m.
Tuesday, 14 January 2020	WLTP Sub Group EV	SG EV	9.30 a.m. – 12.30 p.m.
	Heavy Duty Fuel Economy Workshop	HDV FE	9.30 a.m. – 12.30 p.m.
	Global Real Driving Emissions	RDE	2.30 p.m. – 5.30 p.m.
Wednesday, 15 January 2020	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR	2.30 p.m. – 5.30 p.m.
	Global Real Driving Emissions	RDE	9.30 a.m. – 12.30 p.m.
	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR	9.30 a.m. – 12.30 p.m.
	Vehicle Interior Air Quality	VIAQ	9.30 a.m. – 12.30 p.m.

Annex III

[English only]

List of GRPE informal working groups, task forces and subgroups

<i>Name (Acronym) (Status)</i>	<i>Chair or Co-chairs</i>	<i>Secretaries</i>	<i>End of mandate</i>
Environmental and Propulsion Performance Requirements of L-category vehicles (EPPR) (group)	Adolfo Perujo, Adolfo.PERUJO@ec.europa.eu Mr. H. Suzuki suzuki@ntsel.go.jp	Daniela Leveratto, d.leveratto@immamotorcycles.org Hardik Makhija, hardik@siam.in	December 2020
Electric Vehicles and the Environment (EVE) (group)	Michael Olechiw, Olechiw.Michael@epamail.epa.gov Chen Chunmei (vice-Chair), chencm@miit.gov.cn Hajime Ishii (vice-Chair), ishii@ntsel.go.jp	Andrew Giallonardo, Andrew.Giallonardo@canada.ca	June 2021
Particle Measurement Programme (PMP) (group)	Giorgio Martini, giorgio.martini@ec.europa.eu	Rainer Vogt rvogt@ford.com	June 2021
Vehicle Interior Air Quality (VIAQ) (group)	Andrey Kozlov, a.kozlov@nami.ru Jong Soon Lim (vice-Chair), jongsoon@ts2020.kr	Mark Polster mpolster@ford.com	November 2020
Worldwide harmonized Light vehicles Test Procedure (WLTP) – Phase 2 (group)	Robertus Cuelenaere, rob.cuelenaere@tno.nl Daisuke Kawano (vice-Chair), kawano@ntsel.go.jp	Noriyuki Ichikawa (co-Technical Secretary), noriyuki_ichikawa@mail.toyota.co.jp Markus Bergmann (co-Technical Secretary), markus.bergmann@audi.de	June 2020
Global Real Driving Emissions (RDE) (group)	Panagiota Dilara, Panagiota.DILARA@ec.europa.eu Yoshiaki Kono (vice-Chair), kohno-y2jc@mlit.go.jp Junhong Park (vice-Chair) pjhy98@korea.kr	Noriyuki Ichikawa (co-Technical Secretary), noriyuki_ichikawa@mail.toyota.co.jp Pablo Mendoza Villafuerte (co-Technical Secretary), pablo.mendoza-villafuerte@cnhind.com	January 2021

Annex IV

Adopted amendments to ECE/TRANS/WP.29/2019/120

Adopted on the basis of GRPE-80-15-Rev.1 (see para. 07)

Informal Document WP-180-06 to be introduced during the March 2020 session of WP.29

I. Proposal

Paragraph 6.3.3.(g), amend to read:

“(g) Excessive ~~visual~~ **visible** smoke emission;

Paragraph 6.4.2.4.(s), amend to read:

“(g) ~~Visual~~ **Visible** smoke emission, **black soot deposit in the exhaust pipe (for vehicles equipped with a particulate filter)** ~~or unobtrusive drive-by emissions measurement~~;

Paragraph 6.5.3.(a), amend to read:

“(a) Vehicles identified as gross polluters by means of remote sensing techniques, ~~or~~ emitting excessive ~~visual~~ **visible** smoke **or black soot deposit in the exhaust pipe (for vehicles equipped with a particulate filter)**;

II. Justification

If a particulate filter is defective and/or has been removed, soot deposit are likely to appear on the exhaust pipe, highlighting a potential problem with the particulate filter.

Annex V

Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/2

Adopted on the basis of GRPE-80-07 (see para. 0)

A new Supplement to the 06 and 07 series of amendments to UN Regulation No. 83

I. Proposal

In the 06 and the 07 Series of Amendments

Add a new paragraph 5.3.9. to read:

“5.3.9. Vehicles that use a reagent for the exhaust after-treatment system shall meet the requirements described in Appendix 6 to this Regulation.”

Paragraph 5.3.1.2.1.2., amend to read:

“5.3.1.2.1.2. Notwithstanding the requirement of paragraph 5.3.1.2.1.1., **mono-fuel gas** vehicles ~~that can be fuelled with either petrol or a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and which the petrol tank cannot contain more than 15 litres of petrol~~ will be regarded for the Type I test as vehicles that can only run on a gaseous fuel.”

Paragraph 5.3.2.1.2., amend to read:

“5.3.2.1.2. Notwithstanding the requirement of paragraph 5.3.2.1.1., **mono-fuel gas** vehicles ~~that can be fuelled with either petrol or a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and which the petrol tank cannot contain more than 15 litres of petrol~~ will be regarded for the Type II test as vehicles that can only run on a gaseous fuel.”

Paragraph 5.3.3.1.2., amend to read:

“5.3.3.1.2. Notwithstanding the requirement of paragraph 5.3.3.1.1., **mono-fuel gas** vehicles ~~that can be fuelled with either petrol or a gaseous fuel, but where the petrol system is fitted for emergency purposes or starting only and which the petrol tank cannot contain more than 15 litres of petrol~~ will be regarded for the Type III test as vehicles that can only run on a gaseous fuel.”

Annex 1, paragraph 3.2.12.2.5.5., amend to read:

“3.2.12.2.5.5. Schematic drawing of the fuel tank with indication of **nominal** capacity and material:

Annex 7, paragraph 4.7.2., amend to read:

“4.7.2. The chamber shall have one or more fans or blowers of like capacity 0.1 to 0.5 ~~m³/min~~ **m³/sec** with which to thoroughly mix the atmosphere in the enclosure. It shall be possible to attain an even temperature and hydrocarbon concentration in the chamber during measurements. The vehicle in the enclosure shall not be subjected to a direct stream of air from the fans or blowers”

Annex 11, paragraph 3.1.1., amend to read:

“3.1.1. Access to the OBD system required for the inspection, diagnosis, servicing or repair of the vehicle shall be unrestricted and standardised. All emission-related fault codes shall be consistent with ~~paragraph 6.5.3.4.~~ **paragraph 6.5.3.5.** of Appendix 1 to this annex.

In the 06 Series of Amendments only

Paragraph 1. of Appendix 6, amend to read:

“1. Introduction

This ~~Annex~~ **appendix** sets out the requirements for vehicles that rely on the use of a reagent for the after-treatment system in order to reduce emissions. Every reference in this ~~Annex~~ **appendix** to 'reagent tank' shall be understood as also applying to other containers in which a reagent is stored

...”

*Annex 1, paragraph 3. footnote **, amend to read:*

“**
Mono-~~fuel gas v~~ehicles can be fuelled with both petrol and a gaseous fuel but if the petrol system is fitted for emergency purposes or starting only and the petrol tank cannot contain more than 15 litres of petrol, they will be regarded for the test as vehicles which can only run a gaseous fuel.”

In the 07 Series of Amendments only

Paragraph 1. of Appendix 6, amend to read:

“1. Introduction

This appendix sets out the requirements for vehicles that rely on the use of a reagent for the after-treatment system in order to reduce emissions. Every reference in this ~~Annex~~ **appendix** to 'reagent tank' shall be understood as also applying to other containers in which a reagent is stored

...”

Annex 1, paragraph 3., footnote 8, amend to read:

“(8) Mono-~~fuel gas v~~ehicles can be fuelled with both petrol and a gaseous fuel but if the petrol system is fitted for emergency purposes or starting only and the petrol tank cannot contain more than 15 litres of petrol, they will be regarded for the test as vehicles which can only run a gaseous fuel.”

II. Justification

1. There is currently no reference to Appendix 6 in the ‘main body’ of UN Regulation No. 83 and therefore there is no way of knowing that the requirements of this appendix need to be followed when type approval testing such vehicles.
2. The definition of “mono-fuel gas vehicle” was clarified in working paper ECE/TRANS/WP.29/GRPE/2018/13 and published in UN Regulation No. 83 Revision 4 Amendment 12 and UN Regulation No. 83 Revision 5 Amendment 8.
3. A further reading of the Regulation however revealed that despite the existence of a definition, the content of this definition has been used in several places rather than using the defined term.
4. This proposal would replace those usages with the defined term.
- 4a. On review of working document 2020/2 2 errors were identified. In the title of the 5th proposed amendment the paragraph number was incorrectly stated as 5.3.12.2.5.5. where it should have been 3.2.12.2.5.5., this has been corrected. The amendment to paragraph number 5.3.5.1. was included on the basis of incorrect information and has been removed from the paper.
5. 3 references to “Annex” should refer to “Appendix”
6. The specification of the blowers in a SHED facility have been incorrect for some considerable time. This was noticed in the development of UN GTR No. 15 and UN Regulation No. 83 should be consistent.

7. One reference in Annex 11 was found to be incorrect.
8. This document supersedes ECE/TRANS/WP.29/GRPE/2020/2.

Annex VI

Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/5

Adopted on the basis of GRPE-80-08, as amended during the session and GRPE-80-16 (see para. 0)

A new Supplement to the 06 and 07 series of amendments to UN Regulation No. 83

I. Proposal

Annex 11, paragraph 2.14., amend to read:

"2.14. "Permanent emission default mode" refers to a case where the engine management controller permanently switches to a setting that does not require an input from a failed component or system where such a failed component or system would result in an increase in emissions from the vehicle to a level above the limits given in paragraph 3.3.2. of this annex.

2.14.1. Permanent in this context means that the default mode is not recoverable, i.e. the diagnostic or control strategy that caused the emission default mode cannot run in the next driving cycle and cannot confirm that the conditions that caused the emission default mode is not present anymore. All other emission default modes are considered not to be not permanent."

Annex 11, add a new paragraph 2.21.:

"2.21. "Limp-home routines" means any default mode other than emission default mode."

Annex 11, paragraph 3.5.1, amend to read:

"3.5.1. The OBD system shall incorporate a malfunction indicator readily perceivable to the vehicle operator. The MI shall not be used for any other purpose except to indicate emergency start-up, **emission default modes** or limp-home routines which effect the emission system to the driver. The MI shall be visible in all reasonable lighting conditions. When activated, it shall display a symbol in conformity with ISO 2575. A vehicle shall not be equipped with more than one general purpose MI for emission-related problems. Separate specific purpose tell tales (e. g. brake system, fasten seat belt, oil pressure, etc.) are permitted. The use of red colour for an MI is prohibited."

Annex 11, paragraph 3.8.1, amend to read:

"3.8.1. The OBD system may erase a fault code and the distance travelled and freeze-frame information if the same fault is not re-registered in at least 40 engine warm-up cycles or ~~forty driving cycles with vehicle operation in which the criteria specified in sections 7.5.1.(a) (c) of Annex 11, Appendix I are met.:~~ **40 driving cycles with vehicle operation in which the following criteria (a) to (c) are satisfied:**

- (a) **Cumulative time since engine start is greater than or equal to 600 seconds;**
- (b) **Cumulative vehicle operation at or above 40 km/h occurs for greater than or equal to 300 seconds;**
- (c) **Continuous vehicle operation at idle (i.e. accelerator pedal released by driver and vehicle speed less than or equal to 1.6 km/h) for greater than or equal to 30 seconds."**

Annex 11, paragraph 7.3.2., amend to read:

"7.3.2. In addition to the requirements of paragraph 7.3.1. of this appendix:

- (a) Secondary air system monitor denominator(s) shall be incremented if the commanded "on" operation of the secondary air system occurs for a time greater than or equal to 10 seconds. For purposes of determining this commanded "on" time, the OBD system may not include time during intrusive operation of the secondary air system solely for the purposes of monitoring.
- (b) Denominators of monitors of systems only active during cold start shall be incremented if the component or strategy is commanded "on" for a time greater than or equal to 10 seconds.
- (c) The denominator(s) for monitors of Variable Valve Timing (VVT) and/or control systems shall be incremented if the component is commanded to function (e.g., commanded "on", "open", "closed", "locked", etc.) on two or more occasions during the driving cycle or for a time greater than or equal to 10 seconds, whichever occurs first.
- (d) For the following monitors, the denominator(s) shall be incremented by one if, in addition to meeting the requirements of this paragraph on at least one driving cycle, at least 800 cumulative kilometres of vehicle operation have been experienced since the last time the denominator was incremented:
 - (i) Diesel oxidation catalyst;
 - (ii) Diesel particulate filter.
- (e) Without prejudice to requirements for the increment of denominators of other monitors the denominators of monitors of the following components shall be incremented if and only if the driving cycle started with a cold start:
 - (i) Liquid (oil, engine coolant, fuel, SCR reagent) temperature sensors;
 - (ii) Clean air (ambient air, intake air, charge air, inlet manifold) temperature sensors;
 - (iii) Exhaust (EGR recirculation/cooling, exhaust gas turbo-charging, catalyst) temperature sensors;
- (f) The denominators of monitors of the boost pressure control system shall be incremented if all of the following conditions are met:
 - (i) The general denominator conditions are fulfilled;
 - (ii) The boost pressure control system is active for a time greater than or equal to 15 seconds.
- (g) **Manufacturers may request to use special denominator conditions for certain components or systems, and this request can be approved only if it can be demonstrated to the Type Approval Authority by submitting data and/or an engineering evaluation that other conditions are necessary to allow for reliable detection of malfunctions. ~~The Type Approval Authority shall only approve such requests if the manufacturer provides data and/or an engineering evaluation that supports the necessity of a special denominator.~~**

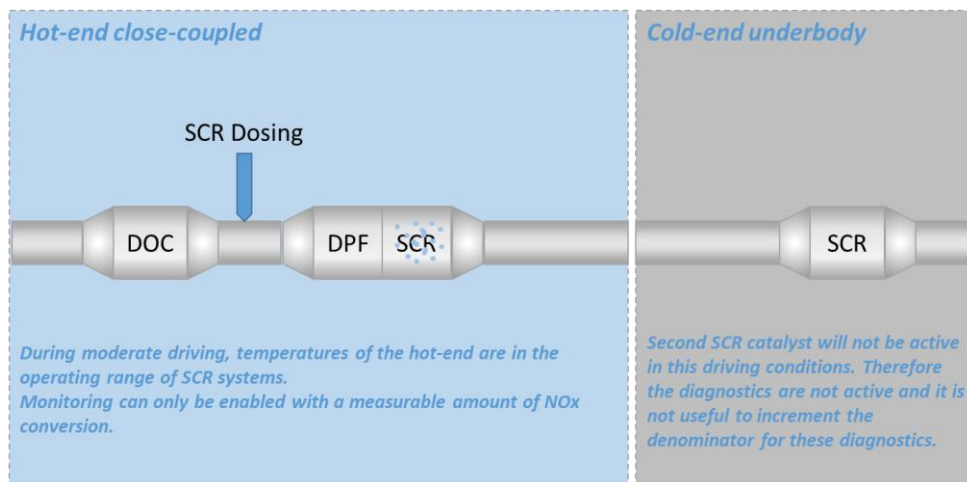
II. Justification

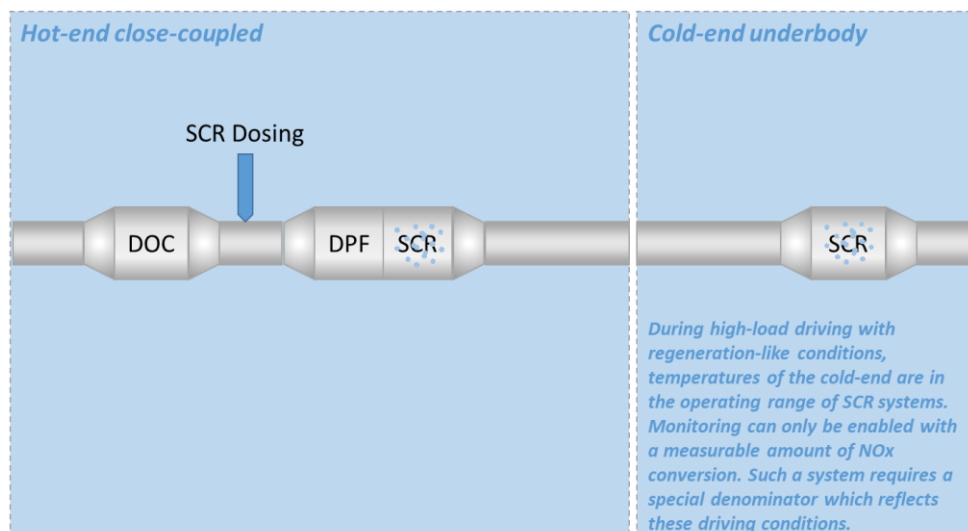
A. Definition of term “permanent”

1. This proposal defines the terms “limp-home routine” and clarifies “permanent emission default mode” in UN Regulation No. 83.
2. The term “permanent” is not further specified and leaves room for different interpretations. A more precise definition of the term “permanent” in the context of emission default modes would be appreciated to make the Regulation more comprehensive.
3. Activating the MI is only necessary in case the emissions exceed the applicable OBD thresholds due to the activated “permanent emission default mode”. (Paragraphs 3.5.2 and 2.14)
4. “Permanent” can be considered as not recoverable in the next driving cycle, i.e. the diagnostic or control strategy that caused the emission default mode cannot run in the next driving cycle again and cannot confirm that the condition that caused the emission default mode is **not** present anymore. A short or a temporary default mode, e.g. for component protection, is recoverable and therefore not seen as permanent. **In the original working document the highlighted word “not” was missing from the proposal but included here in the justification.**
5. “Limp-home routines” means any default mode other than emission default mode. For example, a limp-home routine could be a limitation of vehicle speed or engine power due to safety related failures within the stability control.

B. Introduction of special denominator

6. The current definitions of the specific denominators are based on engine aftertreatment system combinations which are designed as one TWC for gasoline vehicles and DOC, DPF and SCR respectively NSC for Diesel engines.
7. Upcoming emission requirements will bring up additional aftertreatment components like Gasoline Particulate Filters (GPF) or new designs with more than one SCR catalyst. Such new systems or catalyst combinations might require specific conditions to enable the monitoring, especially when their purpose is designed for such conditions.
8. In case of a SCR system with two catalyst bricks, where one is mounted close to the engine and the other one further downstream, the NO_x aftertreatment would be dependent on temperature conditions. The downstream SCR would be used for NO_x aftertreatment mainly during high load and the resulting temperature conditions, e.g. during a regeneration. Based on that the NO_x conversion capability could only be monitored during comparable conditions.





Definition to erase fault codes

The initial definition in the UN Regulation No. 83 to erase fault codes by counting engine warm-up cycles has been adapted to consider hybrid electric vehicles. As engine warm-up cycles might occur less frequently compared to conventional combustion engines, the engine warm-up cycle is not suitable for hybrid vehicles and therefore an alternative cycle was included by referencing to the general denominator. However, this updated definition (like paragraphs 7.5.1.(a)–(c)* of Appendix I to Annex 11) to erase fault codes would not (or not sufficiently) allow fault code erasing in cold regions (below -7°C) and high altitude (above 2440m). Therefore, a further update is proposed to adapt the definition by deleting the two environmental conditions (ambient temperature $< -7^{\circ}\text{C}$ and high altitude $> 2440\text{m}$). Except for these two criteria, the conditions to erase a fault code are identical. This proposal would support an international harmonization of OBD regulations as well as geographical differences in all contracting parties.

*Appendix I to Annex 11

7.5.1. The general denominator is a counter measuring the number of times a vehicle has been operated. It shall be incremented within 10 seconds, if and only if, the following criteria are satisfied on a single driving cycle:

(a) Cumulative time since engine start is greater than or equal to 600 seconds while at an elevation of less than 2,440 m above sea level and at an ambient temperature of greater than or equal to -7°C ;

(b) Cumulative vehicle operation at or above 40 km/h occurs for greater than or equal to 300 seconds while at an elevation of less than 2,440 m above sea level and at an ambient temperature of greater than or equal to -7°C ;

(c) Continuous vehicle operation at idle (i.e. accelerator pedal released by driver and vehicle speed less than or equal to 1.6 km/h) for greater than or equal to 30 seconds while at an elevation of less than 2,440 m above sea level and at an ambient temperature of greater than or equal to -7°C .

Annex VII

Adopted amendments to GRPE-80-18

Adopted on the basis of GRPE-80-18-Rev.1 (see para. 0)

A new Supplement to the 06 and 07 series of amendments to UN Regulation No. 83

I. Proposal

Annex 4a, amend to read

“5.1. Test procedure

The procedure for measuring the vehicle road load is described in Appendix 7a to this annex.

In the case where the vehicle road load has already been determined according to WLTP procedures as defined in UN GTR No. 15, the methodology, described in Appendix 7b may alternatively be used.

These procedures are not required if the chassis dynamometer load is to be set according to the reference mass of the vehicle”

Annex 4a, rename Appendix 7 to Appendix 7a.

Annex 4a, insert a new Appendix 7b:

"Annex 4a - Appendix 7b

Alternative procedure for determination of the total road load power of a vehicle

1. Introduction

The purpose of this appendix is to provide the road load power calculation method that may be used, at the choice of manufacturer, when the vehicle road load has been determined according to WLTP procedures as defined in UN GTR No. 15.

2. Method

2.1. WLTP Road Load calculation of the vehicle

The WLTP Road Load of the vehicle shall be determined according to UN GTR No. 15 Annex 4 or in case the vehicle is part of an interpolation family, according to Annex 7 point 3.2.3.2.2. “Road Load calculation for an individual vehicle” considering as input parameters of the individual vehicle:

- The Test Mass of the vehicle¹, fitted with its standard equipment¹
- The RRC value of the applicable tyre energy class according to Table A4/2 of UN GTR No. 15 annex 4 or, if the tyres on the front and rear axles belong to different energy efficiency classes, the weighted mean using the equation in paragraph 3.2.3.2.2.3. of UN GTR No. 15 annex 4.
- The aerodynamic drag of the vehicle fitted with its standard equipment¹

2.2. calculation of the applicable (NEDC) road load of the vehicle

¹ As defined in UN GTR No. 15

2.2.1. Effect of different tyre pressure prescriptions

The tyre pressure to be taken into account for the purpose of calculating the NEDC road load shall be the average between the two axles of the average between the minimum and maximum tyre pressure permitted for the selected tyres on each axle for the NEDC reference mass of the vehicle. The calculation shall be carried out with the following formula:

$$P_{avg} = \left(\frac{P_{max} + P_{min}}{2} \right)$$

Where,

P_{max} , is the average of the maximum tyre pressures of the selected tyres for the two axles;

P_{min} , is the average of the minimum tyre pressures of the selected tyres for the two axles.

The corresponding effect in terms of resistance applied to the vehicle shall be calculated using the following formula:

$$TP = \left(\frac{P_{avg}}{P_{min}} \right)^{-0.4}$$

2.2.2. Effect of tyre tread depth

The effect in terms of the resistance applied to the vehicle shall be determined in accordance with the following formula:

$$TTD = \left(2 \cdot \frac{0.1 \cdot RM_n \cdot 9.81}{1000} \right)$$

Where, RM_n is the reference mass of the vehicle according to this Regulation

2.2.3. Effect of different consideration of rotating parts

During the WLTP coastdown setting, coastdown times are to be transferred to forces and vice versa by taking into account the applicable test mass plus the effect of rotational mass (3 % of the sum of the MRO and 25 kg). For the NEDC coastdown setting, coastdown times are to be transferred to forces and vice versa by neglecting the effect of rotational mass.

2.2.4. Determination of the NEDC road load coefficients

(a) The road load coefficient $F_{0,n}$ expressed in Newton (N) for vehicle shall be determined as follows:

(i) Effect of different inertia:

$$F_{0n}^1 = F_{0w} \cdot \left(\frac{RM_n}{TM_w} \right)$$

Where:

RM_n is the Reference Mass of the vehicle according to this Regulation

F_{0w} is the road load coefficient F_0 determined for the WLTP test of the vehicle;

TM_w is the WLTP test mass of the vehicle fitted with its standard equipment.

(ii) Effect of different tyre pressure:

$$F_{0n}^2 = F_{0nw}^1 \cdot TP$$

Where the factors TP in the formula are as defined in point 2.2.1.

(iii) Effect of the inertia of rotating parts:

$$F_{0n}^3 = F_{0nw}^2 \cdot \left(\frac{1}{1.03} \right)$$

(iv) Effect of different tyre tread depth:

$$F_{0n} = F_{0nw}^3 \cdot TTD$$

Where the factors *TTD* in the formula are as defined in point 2.2.2

(b) The road load coefficient F_{1n} for the vehicle shall be determined as follows:

$$F_{1n} = F_{1w} \cdot \left(\frac{1}{1.03} \right)$$

(c) The road load coefficient F_{2n} for the vehicle shall be determined as follows:

$$F_{2n} = F_{2w} \cdot \left(\frac{1}{1.03} \right)$$

Where the factor F_{2w} is the WLTP road load coefficient F_2 determined of the vehicle fitted with its standard equipment."

II. Justification

1. UN GTR No. 15 (WLTP) has introduced changes to some of the parameters in the process of road load determination.
2. EU have defined in its correlation Regulation, the methodology to derive an NEDC Road Load from a WLTP Road Load
3. This amendment avoids the burden of a new road load determination when a WLTP road load has been performed.

Annex VIII

Adopted amendments to ECE/TRANS/WP.29/GRPE/2020/6

Adopted on the basis of modifications made during the session (see para. 0)

A new Supplement to the 01 series of amendments to UN Regulation No. 101

I. Proposal

Annex 6, paragraph 1.1., amend to read:

- “1.1. Emissions of carbon dioxide (CO₂) and fuel consumption of vehicles powered by an internal combustion engine only shall be determined according to the procedure for the Type I test as defined in Annex 4a to Regulation No. 83 according to the series of amendments to which the vehicle is approved or in the case that the vehicle is not approved according to Regulation No. 83, the series of amendments in force at the time of the approval of the vehicle.

In case vehicle’s emissions are approved according to WLTP procedures as defined in UN GTR No. 15, the methodology for Road Load determination and dyno setting, defined in Annex 7-Appendix 2 may be used instead of the methodology of Annex 4a –Appendix 7 to Regulation No.83.”

Annex 7, Appendix, amend to read:

"Annex 7 - Appendix 1

Determination of the total road load power of a vehicle powered by an electric power train only, and calibration of the dynamometer"

Annex 7, insert a new Appendix 2:

"Annex 7 - Appendix 2

Alternative procedure for determination of the total road load power of a vehicle

1. Introduction

The purpose of this appendix is to provide the road load power calculation method that may be used, at the choice of manufacturer, when vehicle’s emissions are approved using UN GTR No. 15 procedure

2. Method

2.1. WLTP Road Load calculation of the vehicle

The WLTP Road Load of the vehicle shall be determined according to UN GTR No. 15 Annex 4 or in case the vehicle is part of an interpolation family, according to Annex 7 point 3.2.3.2.2. “Road Load calculation for an individual vehicle” considering as input parameters of the individual vehicle:

- (a) The Test Mass of the vehicle ¹, fitted with its standard equipment ¹

- (b) The RRC value of the applicable tyre energy class according to Table A4/2 of UN GTR No. 15 Annex 4 or, if the tyres on the front and rear axles belong to different energy efficiency classes, the weighted mean using the equation in paragraph 3.2.3.2.2.2.3. of UN GTR No. 15 Annex 4.
- (c) The aerodynamic drag of the vehicle fitted with its standard equipment ²

2.2. Calculation of the applicable (NEDC) road load of the vehicle

2.2.1. Effect of different tyre pressure prescriptions

The tyre pressure to be taken into account for the purpose of calculating the NEDC road load shall be the average between the two axles of the average between the minimum and maximum tyre pressure permitted for the selected tyres on each axle for the NEDC reference mass of the vehicle. The calculation shall be carried out with the following formula:

$$P_{avg} = \left(\frac{P_{max} + P_{min}}{2} \right)$$

Where,

P_{max} , is the average of the maximum tyre pressures of the selected tyres for the two axles;

P_{min} , is the average of the minimum tyre pressures of the selected tyres for the two axles.

The corresponding effect in terms of resistance applied to the vehicle shall be calculated using the following formula:

$$TP = \left(\frac{P_{avg}}{P_{min}} \right)^{-0.4}$$

2.2.2. Effect of tyre tread depth

The effect in terms of the resistance applied to the vehicle shall be determined in accordance with the following formula:

$$TTD = \left(2 \cdot \frac{0.1 \cdot RM_n \cdot 9.81}{1000} \right)$$

Where, RM_n is the reference mass of the vehicle according to this Regulation

2.2.3. Effect of different consideration of rotating parts

During the WLTP coastdown setting, coastdown times are to be transferred to forces and vice versa by taking into account the applicable test mass plus the effect of rotational mass (3 % of the sum of the MRO and 25 kg). For the NEDC coastdown setting, coastdown times are to be transferred to forces and vice versa by neglecting the effect of rotational mass.

2.2.4. Determination of the NEDC road load coefficients

- (a) The road load coefficient $F_{0,n}$ expressed in Newton (N) for vehicle shall be determined as follows:

- (i) Effect of different inertia:

$$F_{0n}^1 = F_{0w} \cdot \left(\frac{RM_n}{TM_w} \right)$$

Where:

² As defined in UN GTR No. 15

RM_n is the Reference Mass of the vehicle according to this Regulation

F_{0w} is the road load coefficient F_0 determined for the WLTP test of the vehicle;

TM_w is the WLTP test mass of the vehicle fitted with its standard equipment.

(ii) Effect of different tyre pressure:

$$F_{0n}^2 = F_{0nw}^1 \cdot TP$$

Where the factors TP in the formula are as defined in point 2.2.1.

(iii) Effect of the inertia of rotating parts:

$$F_{0n}^3 = F_{0nw}^2 \cdot \left(\frac{1}{1.03} \right)$$

(iv) Effect of different tyre tread depth:

$$F_{0n} = F_{0nw}^3 \cdot TTD$$

Where the factors TTD in the formula are as defined in point 2.2.2

(b) The road load coefficient F_{1n} for the vehicle shall be determined as follows:

$$F_{1n} = F_{1w} \cdot \left(\frac{1}{1.03} \right)$$

(c) The road load coefficient F_{2n} for the vehicle shall be determined as follows:

$$F_{2n} = F_{2w} \cdot \left(\frac{1}{1.03} \right)$$

Where the factor F_{2w} is the WLTP road load coefficient F_2 determined of the vehicle fitted with its standard equipment.”

II. Justification

1. UN GTR No.15 (WLTP) has introduced changes to some of the parameters in the process of road load determination.
2. Manufacturers in Europe perform NEDC tests as part of many type approvals in order to establish the correlation for CO₂ emissions between the two cycles.
3. In order to perform such NEDC tests, the road loads are derived from those established according to UN GTR No.15 to reduce the burden for manufacturers.
4. This amendment would enable EU NEDC tests performed during the correlation process to be used to obtain approval to UN Regulation No. 101 and in the case where no physical test was performed in the EU correlation, enable calculation of permissible road load data thus reducing burden also in this case.

Annex IX

Technical Report to Amendment 3 to UN GTR No. 19

Adopted on the basis of GRPE-80-35 (see para. 0)

Technical report on the development of Amendment 3 to UN GTR No. 19 on the Evaporative emission test procedure for the Worldwide harmonized Light vehicles Test Procedure (WLTP EVAP)

I. Introduction

1. During the seventy-fourth session of the Working Party on Pollution and Energy (GRPE) in January 2017, the Evaporative emission test procedure for the Worldwide harmonized Light vehicles Test Procedures (WLTP EVAP) Task Force (TF) submitted a working document and an informal document for the consideration of GRPE.
2. The working document ECE/TRANS/WP.29/GRPE/2017/3 (Proposal for a new UN Global Technical Regulation on Evaporative emission test procedure for the Worldwide harmonized Light vehicles Test Procedures), UN GTR No. 19, contained the new proposed test procedure to measure evaporative emission from non-sealed fuel tank systems.
3. Non-sealed fuel tank systems are mostly used in conventional vehicles with an internal combustion engine. Since these vehicles have a high chance of purging the fuel vapours inside the fuel tank systems and the canister(s) into the internal combustion engines, the pressure inside the fuel tank generated by fuel vapours is well maintained at low level.
4. From late 2016 to September 2017, thirteen meetings (including three face-to-face meetings and two drafting meetings) were held and the WLTP EVAP task force worked to include a test procedure covering the sealed fuel tank systems in UN GTR No. 19. These systems are expected to be used in the hybrid electric vehicles driven mainly by electric engines and in the future conventional vehicles.
5. Amendment 1 to UN GTR No. 19 complements the text of the UN GTR not only by adding descriptions of the test procedure for sealed fuel tank systems but also by adding other provisions related to non-sealed fuel tank systems which were raised along the discussions on sealed fuel tank systems.
6. From April to September 2018, four meetings (including one drafting meeting) were held and the WLTP EVAP Task Force worked to include the calibration requirements and intervals for test equipment, and the equation for the variable-volume enclosures in UN GTR No. 19. Also, improvements to clarify the requirements were made.
7. Amendment 2 to UN GTR No. 19 complements the calibration requirements and intervals for test equipment, and the equation for the variable-volume enclosures in UN GTR No. 19. Also, improvements to clarify the requirements were made.
8. In October 2019 further work has been undertaken to amend the scope to include all vehicles fuelled with petrol and to add a new Optional Annex for the CoP method. At this same timing, the previous cross-references to technical requirements in UN Regulation No.83 07 series have been replaced with the full text of those requirements.
9. The discussions of Amendment 3 were led by experts from Japan (Ms. Mayumi "Sophie" Morimoto) and the European Commission (Mr. Bart Thedinga and Mr. Iddo Riemersma). The drafting of the text was led by the expert from the European Commission (Rob Gardner).

II. Text improvements

A. Objectives

10. After the adoption of the original UN GTR No. 19 and Amendments 1 and 2 to it, WLTP IWG started the transposition of UN GTR No. 15 and UN GTR No. 19 into UN regulation. During the discussion of transposition, there was need to modify the scope and to add procedures and requirements on Conformity of Production (CoP) as an Optional Annex. Also, the previous cross-references to technical requirements in UN Regulation No.83 07 series have been replaced with the full text of those requirements to align with UN regulation on WLTP.

11. Therefore, WLTP IWG decided to re-open EVAP task force once to discuss the procedure on Conformity of Production.

B. Topics discussed

12. The following points were discussed in the WLTP EVAP task force meeting. Some topics are also discussed in WLTP Transposition task force and WLTP CoP task force and agreed by WLTP EVAP task force members:

- (a) Modification of Scope
- (b) Modification of depressurisation puff loss overflow SHED measurement
- (c) CoP test procedure and requirements as Optional Annex
- (d) Replace cross-references to UN Regulation No.83 07 series with the full text of those requirements

C. Amendments introduced in UN GTR No. 19

1. Modification of Scope

1.1. *Modification from "positive ignition engines" to "engines fuelled with petrol"*

13. UN GTR No. 19 Amendment 2 scope included only the positive ignition engines. Therefore, even if the compression ignition engines which uses gasoline (petrol) are introduced, those are out of scope of UN GTR No. 19.

14. This was pointed out by Japan during WLTP Transposition task force. Considering the meaning of the evaporative emission test, both Japan and European Commission agreed to change the scope to apply UN GTR No. 19 test to include compression ignition engines using gasoline.

15. To clarify the meaning of "petrol", JRC (European Commission's Joint Research Centre) proposed to add footnote for clarification. No objections were raised by EVAP task force members.

1.2. *Addition of Contracting Party option for "mono-fuel gas vehicles"*

16. UN GTR No. 19 Amendment 2 scope excluded the mono-fuel gas vehicles, which is a mono-fuel vehicle that is designed primarily for permanent running on LPG or NG/biomethane or hydrogen but may also have a petrol system for emergency purposes or starting only, where the nominal capacity of the petrol tank does not exceed 15 litres.

17. Japan had concern that no evaporative emission test will be done for those vehicles that they requested to include them into the scope. However, some gas vehicle manufacturers were against the proposal by Japan. This is because the small petrol tank is only intended for starting or for emergency purposes when gas fuels are emptied. They said that gasoline (petrol) is rarely replenished with fresh petrol. However, Japan requested to comply with UN GTR No. 19 even the vehicle only have small emergency tank, as long as it is fuelled with gasoline (petrol).

18. Therefore, Contracting Party option was added to keep exclusion of mono-fuel gas vehicles from the scope as an option for some Contracting Parties.

2. Modification of depressurisation puff loss overflow SHED measurement

19. After the Working Document for UN GTR No. 19 Amendment 3 was submitted, WLTP EVAP task force received contact from Austria.

20. UN GTR No. 19 Amendment 2 requires the vehicles with sealed fuel tank systems to measure depuressurisation puff loss overflow, which are the hydrocarbons escaping from canister when the tank is depressurised. It is allowed to measure them with 2 different methods. One is to use an additional carbon canister and weight with scale. Another is to use SHED (Sealed Housing Evaporative Determination).

21. If the SHED is used for the measurement, it shall be done one minute after the depressurisation of the sealed fuel tank system. Austria raised concern that one minute is not enough time for mixing the air inside the SHED for a vehicle which has the canister far inside the vehicle. The one minute was originally taken from ORVR method in US EPA regulation, however, it is the test method for puff loss from fuel cap.

22. Austria proposed to use five minutes as an alternative although they had no data that waiting five minutes was sufficient.

23. As inside the SHED will be kept 35°C until the measurement is finished, the longer the mixing take the greater the risk of measuring the hydrocarbons other than depressurisation puff loss overflow.

24. Following e-mail exchange within EVAP task force members, it was confirmed and decided to change one minute to five minutes for now, since it is identified that one minute is not enough for mixing. If there will be a data in the future to show five minutes is not sufficient for finish mixing, another discussion will be undertaken to change the length of mixing.

3. CoP test procedure and requirements as Optional Annex

25. While UN regulation on WLTP was in development, a CoP test procedure became required. Since CoP method will be included in UN regulation on WLTP (with evaporative emission test written in UN GTR No. 19), it was decided to include them also in UN GTR No. 19.

26. The CoP tests are not done by the manufacturer in some countries and therefore the CoP test procedure and requirements are included as an Optional Annex.

3.1. Frequency of test

27. European Commission requested to test one vehicle in EVAP CoP family per a year. Japan supported the proposal. No objections were raised by WLTP EVAP task force members.

3.2. Test method

28. Not like the certification test, the conformity of production tests are done using the vehicles to be sold after the test. Since UN GTR No. 19 test need canister ageing and vehicle

baking, it will make the vehicle after the test most likely not suitable to be sold as "a new vehicle".

29. At first, Japan proposed to use quality check during the production as same as most safety UN regulations. However, European Commission was against the proposals and requested test.

30. Since UN Regulation No.83 07 series had simplified test methods (leak test, vent test, and purge test) to confirm evaporative emission test, European Commission proposed to use these methods as first conformity check.

31. The use of simplified test methods as first conformity check was supported by Japan and auto industries with slight updates for new technology like the sealed fuel tank systems.

32. The option to use the vehicle which have completed a minimum mileage of 20,000 km up to maximum of 30,000 km were added. The minimum mileage of 20,000 km was decided because it is almost equal to aged canister to BWC 300. The maximum mileage of 30,000 km was decided because over this mileage shall be deemed as In Service Conformity vehicles in European regions.

3.3. *Period until pass/fail decision*

33. The technical service proposed to add the period to decide pass/fail of CoP test. The proposal was to 24 months after the initial failed test has been detected. During those 24 months, the manufacture needs to finish maximum 5 vehicle test from same CoP family with UN GTR No. 19 method. Therefore, WLTP EVAP task force members confirmed and supported 24 months are needed to reach to the decision.

4. **Replace cross-references to UN Regulation No.83 07 series with the full text of those requirements**

34. While UN Regulation on WLTP was developed, the cross-references to UN Regulation No.83 07 series were replaced with the full text of those requirements. To align texts of UN GTR No. 19 and UN regulations on WLTP, TF leader decided to replace them also in UN GTR No. 19.

Annex X

Request for authorization to develop a new UN GTR on in-vehicle battery durability for electrified vehicles

Adopted on the basis of GRPE-80-41 (see para.0)

I. Mandate and Objectives

1. In the framework of the 1998 Agreement and under continued work by the informal working group (IWG) on Electric Vehicles and the Environment (EVE), the main objective of this proposal is to seek authorization for the EVE IWG to begin a new mandate, specifically to develop a new UN GTR on the topic of in-vehicle battery performance and durability.
2. The IWG on EVE and IWG on Worldwide harmonized Light vehicles Test Procedure (WLTP) will continue collaborating, to ensure each group's work is complimentary to the other, and avoids any duplication of effort.

II. Introduction

3. The IWG on EVE was set up in June 2012 following the approval by WP.29 of ECE/TRANS/WP.29/AC.3/32. This document established two distinct IWGs to examine environmental and safety issues related to EVs (IWGs on EVE, reporting to the Working Party on Pollution and Energy (GRPE) and the IWG on Electric Vehicle Safety (EVS), reporting to the Working Party on Passive Safety (GRSP)). As the two groups were formed at WP.29, they also reported to this forum directly. The proposal was supported by the European Commission, Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), the National Highway Traffic Safety Administration (NHTSA) and the Environmental Protection Agency (EPA) of the United States of America, the Ministry of Industry and Information Technology (MIIT) of China, and Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT).
4. During the first mandate of the IWG on EVE, the IWG aimed to accomplish the following objectives, which were successfully completed by November 2014:
 - (a) Develop a priority list of topics to address the most timely and significant considerations before the IWG on EVE;
 - (b) Understand and document the current considerations of Electric Vehicles (EVs) under the work of other established informal working groups: the IWGs on Electric Vehicle Safety (EVS), WLTP, Heavy Duty Hybrids (HDH), Environmental and Propulsion unit Performance Requirements (EPPR), and on Vehicle Propulsion System Definitions (VPSD);
 - (c) Establish a mechanism for sharing information and on-going research on topics related to EVs and the environment;
 - (d) Develop a reference guide for environmentally-related EV requirements already established or being considered by Contracting Parties (EV Regulatory Reference Guide (ECE/TRANS/WP.29/2014/81)).
5. The Guide³ (ECE/TRANS/WP.29/2014/81), based on the information provided by the Contracting Parties and IWGs, presented the existing requirements relating to environmentally-related EV attributes at the time of the Guide's development (September 2013). As presented in Chapter 5 of the Guide, the analysis of such information led to the identification of gaps in requirements that could be addressed through the development of

³ Available at: www.unece.org/trans/main/wp29/wp29wgs/wp29gen/gen2014.html

new GTR(s), and/or through supplementing the GTR(s) that are currently under development (i.e. WLTP, EPPR), and/or through other suitable efforts, like research.

6. Subsequently, a second mandate for the IWG on EVE, divided into Parts A and B was approved in November 2014 by AC.3 to conduct additional research to address the recommendations outlined in Chapter 5 of the Guide and EV power determination, and develop GTR(s), if appropriate. The second mandate was separate from the IWG on EVS. Parts A and B of the second mandate addressed the following:

- (a) Battery performance and durability (recommendation 5.3, ECE/TRANS/WP.29/2014/81);
- (b) Determining the powertrain performance (maximum power and torque) of EVs.

Information-sharing issues addressed in Part A and B.

- (a) Method of stating energy consumption (recommendation 5.2, ECE/TRANS/WP.29/2014/81);
- (b) Battery recycling/recyclability (recommendation 5.4, ECE/TRANS/WP.29/2014/81).

7. In November 2016, Part A of the second mandate was completed. At the June 2016 GRPE meeting, the EVE IWG presented a technical document (GRPE-73-24) that indicated the areas of research to pursue on battery performance and durability. It indicated that there was sufficient information available to move forward with a UN GTR on determining the powertrain performance of electrified vehicles. The technical report also recommended that battery recycling or recyclability was not a topic suitable to pursue within the EVE IWG forum. The EVE IWG indicated that it was willing to support efforts to develop a method of stating energy consumption of electrified vehicles if another body within the UNECE framework led them, but that the EVE could not lead the work independently as it required the input of experts in the generation and distribution of electricity.

8. The EVE IWG pursued several topics in part B of the second mandate, based on the findings from part A in the technical report presented to GRPE in June 2016 (GRPE-73-24):

- (a) Developing a UN GTR for powertrain performance
- (b) Continuing research on in-vehicle battery durability and performance
- (c) Finding new leadership for the previous method of stating energy consumption work

9. AC.3 approved document ECE/TRANS/WP.29/2019/33 in March 2019, which instructed the EVE IWG to develop the UN GTR for power determination of electrified vehicles as a standalone UN GTR, rather than an annex to UN GTR no. 15.

10. The EVE IWG presented a draft status report to GRPE in May 2019 on the work on the method of stating energy consumption and research on in-vehicle battery durability and performance. Based on the content of this status report, the EVE IWG requested authorization to continue work for one additional year on the UN GTR on power determination, which was subsequently endorsed by WP.29 in November 2019.

11. The status report indicated that there is sufficient information to allow a UN GTR for in-vehicle battery durability to be started, with the intent of achieving the following general goals:

- (a) Establishing minimum durability performance criteria and developing guidelines for acceptable evidence that the requirements will be met;
- (b) Establishing measures to prevent substandard products from entering the market;
- (c) Allowing adequate room for continued development of the regulation as the industry continues to evolve; and

- (d) Implementing a mechanism for the collection of data that could provide a basis for refining the UN GTR in the future.

12. Owing to the specific set of goals outlined above that place specific constraints on the possible scope of a UN GTR at this time, the EVE IWG recommended at the 79th GRPE in May 2019 that the UN GTR on in-vehicle battery durability be developed under a new mandate.

III. Areas of work

13. The EVE IWG seeks AC.3 the authorization to develop a new UN GTR on in-vehicle battery durability which will be developed in 2 phases:

Phase 1:

- (a) Deliver a first version of a UN GTR on in-vehicle battery durability to AC.3 by November 2021 with;
 - (i) definition of and requirements for electrified vehicle battery performance criteria
 - (ii) requirements for reading and/or displaying battery health information and usage data from the vehicle; and
 - (iii) a provisional in-service conformity test which will include generic usage criteria and a statistical method.

Phase 2:

- (b) Develop a second version of the UN GTR on in-vehicle battery durability with the following:
 - (i) The development of a methodology to define Normal Usage Indices (NUI) based on data read from vehicles
 - (ii) Refined performance criteria requirements for in-vehicle battery durability through assessment of further modelling and data collected from real vehicles and the use of NUIs

IV. Existing regulations

14. Battery durability as it affects the environmental or driving range performance of M- and N-class vehicles is not currently regulated by any UN GTR. It is known that electrically powered driving range of PEVs and OVC-HEVs can be reduced by battery degradation over time. It is also known that changes in environmental performance (pollutant emissions and energy consumption) can potentially occur in all electrified vehicle types as a result of battery degradation. The contracting parties sponsoring this activity agree to address that a UN GTR governing battery durability for these vehicles is necessary.

V. Timeline

15. The timelines proposed below for the new mandate are target timelines. The plan will be regularly reviewed and updated to reflect progress and feasibility of the timeline.

- (i) **January 2020:** EVE IWG presents timeline and framework for mandate request in GRPE.
- (ii) **June 2020:** Request for authorization submitted to AC.3;
- (iii) **January 2020 – June 2020:** EVE IWG formulates drafting group and begins drafting UN GTR with elements agreed upon
- (iv) **June 2020:** EVE IWG provides an update to the June 2020 meeting of GRPE with the detailed elements and proposed timelines to be pursued;

- (v) **June 2020 – December 2020:** EVE IWG begins validation testing of relevant aspects of the proposed procedure, assesses test results and makes further UN GTR changes as necessary
- (vi) **January 2021:** EVE IWG presents to GRPE
 - a. a status update of the first UN GTR validation results;
 - b. first draft UN GTR proposal, both as informal documents for the January 2021 session of GRPE for further discussion and recommendation.
- (vi) **January 2021 – March 2021:**
 - a. EVE IWG revises draft proposal based on discussions and recommendations from GRPE and;
 - b. submits the draft UN GTR for transmission as a formal document for the June 2021 GRPE session
- (vii) **June 2021:** EVE IWG presents Final UN GTR to GRPE at June 2021 meeting for endorsement.
- (viii) **November 2021:** establishment of the UN GTR by AC.3 in the Global Registry.
- (ix) **June 2021-January 2024:** EVE IWG continues information gathering on possible modifications to the UN GTR and develops amendments to the UN GTR for consideration by WP.29 and AC.3, as deemed appropriate.

NOTE: Owing to the lack of prior examples for regulating battery durability, the need to reach consensus among a diversity of parties, and the need to develop and validate new metrics such as usage indices and performance criteria, the EVE IWG is also asking AC.3 to allow up to 1 extra year beyond the timelines above for UN GTR development, if more time is needed to develop, validate, and/or reach consensus on solutions to these issues.
