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Report of the Working Party on Pollution and Energy (GRPE) on its seventy-second session

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I. Attendance and opening statements

1. The Working Party on Pollution and Energy (GRPE) held its seventy-second session from 12 to 15 January 2016, with Mr. C. Albus (Germany) as Chair and Mrs. R. Urdhwareshe (India) 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): Belgium; Canada; China; Czech Republic; France; Germany; Hungary; India; Italy; Japan; Luxembourg; Netherlands; Poland; Republic of Korea (Korea); Russian Federation; South Africa; Spain; Sweden; Switzerland; United Kingdom of Great Britain and Northern Ireland (UK) as well as the United States of America. Experts from the European Commission (EC) also participated. Experts from the following non-governmental organizations took part in the session: Association for Emissions Control by Catalyst (AECC); European Association of Automobile Suppliers (CLEPA/MEMA/JAPIA); European Federation for Transport and Environment (T&E); European Garage Equipment Association (EGEA); European Liquefied Petroleum Gas Association (AEGPL); International Association for Natural Gas Vehicles (IANGV/NGV Global); International Motorcycle Manufacturers Association (IMMA); International Organization of Motor Vehicle Inspection Committee (CITA); International Organization of Motor Vehicle Manufacturers (OICA); Natural Gas Vehicles Association Europe (NGVA Europe); Technical Committee of Petroleum Additive Manufacturers in Europe (CEFIC-ATC) and The European Association of Internal Combustion Engine Manufacturers (EUROMOT).

2. The Chief of the Vehicle Regulations and Transport Innovations Section, Mr. W. Nissler, informed GRPE about the abolishment of four General Service (G) posts within the United Nations Economic Commission for Europe (UNECE) as decided by the UN General Assembly on 23 December 2015. He explained that a G post was abolished in the Vehicle Regulations and Transport Innovations Section since 1 January 2016 due to the immediate retirement of the current incumbent. He warned that this unfortunate situation may affect future services to be provided by the Section.

3. The Chair announced that he will not be in the position to continue chairing GRPE as of year 2017 and, therefore, he will no longer be a candidate at the next GRPE session in June 2016 for the election of officers for the year 2017.

II. Adoption of the agenda (agenda item 1)

Documentation: ECE/TRANS/WP.29/GRPE/2016/1 and Add.1
Informal documents GRPE-72-01, GRPE-72-07 and
GRPE-72-17-Rev.1

4. GRPE adopted the provisional agenda prepared for its seventy-second session (ECE/TRANS/WP.29/GRPE/2016/1 and Add.1), as updated and consolidated in GRPE-72-17-Rev.1, including the informal documents tabled for the session. GRPE noted GRPE-72-01, on the organization of GRPE Informal Working Group (IWG) meetings held during the week.

5. The informal documents distributed during the GRPE session are listed in Annex I. Annex II contains a list of the informal meetings held in conjunction with the GRPE session. Annex III lists GRPE IWGs, task forces and subgroups, giving details on their Chairs, secretaries and the end of their mandates.

6. The secretariat introduced GRPE-72-07, announcing that the next GRPE session would take place on 7-10 June 2016 and recalling the corresponding deadline (14 March 2016) for the submission of official documents. The Chairs and Secretaries of IWGs were

invited to approach the secretariat to define the calendar of meetings of IWGs for the June 2016 GRPE session.

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

Documentation: ECE/TRANS/WP.29/1116
ECE/TRANS/WP.29/1118
Informal document GRPE-72-08

7. The secretariat introduced GRPE-72-08 and reported on relevant GRPE items discussed during the 166th and 167th sessions of the World Forum. For more details, see ECE/TRANS/WP.29/1116 and ECE/TRANS/WP.29/1118. GRPE noted the exchange of information on the Volkswagen case that had taken place at the November 2015 session of WP.29.

8. The expert from OICA stated that the information in GRPE-72-08 on the transposition process of the Global Technical Regulation (GTR) on Worldwide harmonized Light vehicles Test Procedure (WLTP) into a new Regulation could be misleading. He clarified that WP.29 agreed at its November 2015 session to include a highest level of stringency in the new Regulation on WLTP, but without any ranking order between all other lower levels.

IV. Light vehicles (agenda item 3)

A. 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/2016/4
ECE/TRANS/WP.29/2016/28
Informal documents GRPE-72-03, GRPE-72-05, GRPE-72-14 and GRPE-72-15

9. The expert from EC introduced ECE/TRANS/WP.29/GRPE/2016/4 aimed at correcting the calculation of the vehicle coast down resistance to progress force in the 07 series of amendments to Regulation No. 83.

10. The expert from OICA drew the attention to the confusion and administrative burden that could be created by the proposal if requirements were not aligned between the 06 and 07 series of amendments to Regulation No. 83, as well as with Regulation No. 101. He expressed his concern on the possible impact this may have on the CO₂ emissions type approval value and, thus, on the correlation program between WLTP and the New European Driving Cycle (NEDC). He suggested considering amendments to the 06 and 07 series of amendments to Regulation No. 83 and to Regulation No. 101 as an entire package at the next GRPE session.

11. The Chair of GRPE suggested adopting the proposal not only for the 07 series but also for the 06 series of amendments to Regulation No. 83 since the text and the paragraph numbering were the same in both cases. The experts from the Netherlands, UK and T&E expressed their support to ECE/TRANS/WP.29/GRPE/2016/4. The expert from EC

volunteered to review Regulation No. 101 to align it with this proposal at the next GRPE session in June 2016. He also clarified that the correlation program between WLTP and NEDC ensuring that both tests were properly coupled would not be affected by this proposal.

12. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/4 with the following correction:

Title of the document, amend to read:

"Proposal for a new Supplement to the **06 and 07** series of amendments to Regulation No. 83 (Emissions of M₁ and N₁ vehicles)."

13. GRPE requested the secretariat to submit it to WP.29 and the Administrative Committee of the 1958 Agreement (AC.1) for consideration and vote at their June 2016 sessions as draft Supplement 7 to the 06 series of amendments and draft Supplement 3 to the 07 series of amendments to Regulation No. 83.

14. The expert from Italy presented GRPE-72-03 on amendments to Regulation No. 83 to introduce the possibility to inhibit the driver inducement system of rescue and police service vehicles.

15. The expert from OICA supported the proposal and its alignment with Regulation No. 49. The expert from the Netherlands agreed in principle with the proposal but expressed a reservation to further examine the possible drawbacks such as the exemption proposed for specific vehicles when becoming publicly available. The expert from T&E supported this reservation and underlined the need to reinsert the initial system when these vehicles abandon the rescue and police services in the second hand market.

16. The Chair invited the expert from Italy to submit an updated proposal as an official document at the next GRPE session taking into account the comments received.

17. The expert from OICA presented GRPE-72-05 reproducing ECE/TRANS/WP.29/2016/28 aimed at reintroducing a sentence that was inadvertently deleted out in the original proposal and then in ECE/TRANS/WP.29/2015/57 adopted at the 166th session of WP.29. He recalled that ECE/TRANS/WP.29/2016/28 had been already submitted by the secretariat to WP.29 and AC.1 for consideration at their March 2016 sessions, subject to the endorsement of GRPE at this session, to reintroduce the sentence.

18. The expert from Germany agreed with ECE/TRANS/WP.29/2016/28 and announced the intention of Germany to submit a proposal at the next GRPE session to further improve the requirements on the total number of failures simulated when testing the malfunction indicator.

19. GRPE endorsed ECE/TRANS/WP.29/2016/28 to be considered by WP.29 and AC.1 at their March 2016 sessions.

20. The expert from EC presented GRPE-72-14 and GRPE-72-15 aimed at providing clarifications and correcting errors to the 06 and 07 series of amendments to Regulation No. 83 respectively. He confirmed that there was no need to modify the 05 series of amendments.

21. GRPE agreed in principle with both proposals and requested the secretariat to combine them in a single document to be distributed with an official symbol at the next GRPE session.

B. GTR No. 15 on Worldwide harmonized Light vehicles Test Procedure (WLTP)

Documentation: ECE/TRANS/WP.29/GRPE/2016/3
ECE/TRANS/WP.29/2016/29
Informal documents GRPE-72-02-Rev.1, GRPE-72-09-Rev.2,
GRPE-72-10-Rev.2, GRPE-72-18, GRPE-72-19 and GRPE-72-20

22. The Vice-Chair of the IWG on WLTP reported on the progress made by the group (GRPE-72-19). He highlighted the conclusion of the work under Phase 1B after having submitted to GRPE the corresponding amendments to GTR No. 15 and the technical report to be considered at this session.

23. The expert from EC presented ECE/TRANS/WP.29/GRPE/2016/3 proposing amendments to GTR No. 15 as a result of Phase 1B activities of the IWG on WLTP. He provided some background information on Phase 1A and on the main objectives of Phase 1B. He explained the technical topics addressed by ECE/TRANS/WP.29/GRPE/2016/3 with regard to conventional Internal Combustion Engine (ICE) vehicles, electrified vehicles, alternative pollutants and other improvements of the provisions of GTR No. 15.

24. The expert from OICA presented GRPE-72-09-Rev.2 introducing editorial corrections and improvements to the text of ECE/TRANS/WP.29/GRPE/2016/3 that had been identified since the last IWG meeting held in Tokyo in late September 2015. He mentioned that OICA accepted the task to collect and to consolidate all amendments to ECE/TRANS/WP.29/GRPE/2016/3 since the drafting coordinator could not be funded any longer by the Contracting Parties. He introduced GRPE-72-10-Rev.2 as a consolidated version of ECE/TRANS/WP.29/GRPE/2016/3 including all the modifications laid out in GRPE-72-09-Rev.2.

25. The expert from EC presented the technical report on the further development of WLTP (GRPE-72-02-Rev.1). He clarified that the technical report contained the development of the test procedure combining both Phase 1A and Phase 1B activities. He also mentioned that the test cycle development under Phase 1A had been considered in the technical report provided for the original version of GTR No. 15 and it was again referred to in GRPE-72-02-Rev.1.

26. GRPE adopted GRPE-72-10-Rev.2 as reproduced in Addendum 1 to this report and requested the secretariat to submit it to WP.29 and the Executive Committee of the 1998 Agreement (AC.3) for consideration and vote at their June 2016 sessions as draft Amendment 1 to GTR No. 15. GRPE also adopted the technical report (GRPE-72-02-Rev.1) as reproduced in Addendum 2 to this report and requested the secretariat to submit it to WP.29 and AC.3 for consideration and vote at their June 2016 sessions.

27. The Vice-Chair of the IWG on WLTP informed GRPE about the new leading team and the structure of task forces for the Phase 2 of the development of GTR No. 15 (GRPE-72-19). He presented GRPE-72-20 listing the working items and proposing a work plan in two steps (Phase 2A and Phase 2B). He explained that Phase 2 activities had already been initiated since AC.3 had endorsed the extension of the mandate at its November 2015 session. He mentioned that different approaches were being considered at this stage for evaporative emissions requirements with the aim to submit a proposal at the January 2017 GRPE session. He underlined the need of close collaboration with the IWG on Electric Vehicles and the Environment (EVE) during Phase 2.

28. For the sake of clarity and simplicity in the application of regulations, the secretariat recommended developing new GTRs for evaporative emissions and On-Board Diagnostic

systems (OBD) rather than new annexes to GTR No. 15. The expert from OICA highlighted that the separation of GTRs for different topics made the 1998 Agreement more attractive as it facilitated the transposition into national/regional legislation. The expert from India expressed the same opinion and referred to the split of GTRs because of different fuels and durability testing under the work of Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles as a good example to be followed. The expert from EC expressed her preference for splitting GTRs for different topics.

29. GRPE recommended in principle developing new GTRs dealing specifically with evaporative emissions and OBD, subject to the reconfirmation of this approach at the next meeting of the IWG on WLTP.

30. The expert from EC presented GRPE-72-18 on the transposition of GTR No. 15 into the legislation of the European Union. He informed GRPE about the progress made on the development of a new European Regulation, which was expected to replace the New European Driving Cycle (NEDC) in 2017 and which had a specific annex based on GTR No. 15 adapted to the European requirements.

31. The expert from EC continued his presentation (GRPE-72-18) on the transposition of GTR No. 15 into new Regulations annexed to the 1958 Agreement. He underlined the agreement of WP.29 at its November 2015 session on developing a new Regulation on WLTP with one top level (highest stringency) and other different levels of stringency below that top level. He recalled that the top level (Level 2) would correspond to the most stringent combination of regional requirements, whereas the levels below (Level 1a, Level 1b, etc.) would correspond to a specific national or regional legislation in terms of emission limits as well as region-specific technical and administrative requirements. He showed a possible structure of a new Regulation on WLTP and he highlighted the different parts (e.g. Annexes on approval marks and the communication form) that should enable distinction between the different levels. He introduced a possible structure of a second new Regulation that would complement the Regulation on WLTP (type 1 test only) by referring to the relevant parts of Regulation No. 83 on other test types. As the technical sponsor for these activities, he sought the advice of GRPE on the best way to move forward.

32. The expert from OICA underlined the need of Level 2 to be used for the Universal International Whole Vehicle Type Approval (U-IWVTA) as it would be the only level subjected to mutual recognition between all Contracting Parties to the 1958 Agreement applying the Regulation. He highlighted the complexity of defining Level 2 because of the different factors needed to be taken into account when defining the highest stringency (e.g. emissions limits, test, fuel, vehicle size and technology).

33. The Chair of GRPE mentioned that including Level 2 directly in the original version of the new Regulation on WLTP together with the levels below (Level 1a, Level 1b, etc.) could be a possible alternative to introducing Level 2 as a new series of amendments to the Regulation. The expert from EC emphasized the need of starting with the levels below to fill the gap in the European legislation in due time by 2017, whereas Level 2, currently artificial and likely to be time consuming to be defined due to its complexity, could be developed later on towards global harmonization. The secretariat reminded that the latest series of amendments to a Regulation (or its original version in the absence of series of amendments) were always subject to mutual recognition according to the 1958 Agreement.

34. GRPE endorsed the approach to focus first on the levels below (Level 1a, Level 1b, etc.) when developing the new Regulation on WLTP, while having in mind the need of Level 2 for IWVTA. GRPE agreed to further investigate the best way to integrate all levels in the new Regulation on WLTP and to resume discussion at the next GRPE session in June 2016.

35. The Chair of GRPE recommended that the structure of the new Regulation on WLTP should ensure the modular approach to take into account different levels. The expert from OICA was of the opinion that separation of modules could be helpful. The secretariat recalled the existence of safety Regulations structured according to one of the following options: a) modular approach in form of annexes corresponding to each of the levels, or b) single structure integrating the specifications of each level through tables in all relevant paragraphs.

36. The expert from EC wondered whether Japan would follow the provisions on the conformity of production to decide if these provisions could be directly inserted in the new Regulation on WLTP. The Chair of the IWG on Gaseous Fuelled Vehicles (GFV) mentioned that Annex 5 addressed specific additional requirements for GFV but he clarified that these requirements could also be included in the main annex on type 1 test.

37. GRPE endorsed the basic elements in GRPE-72-18 on the structure of both new Regulations (on WLTP and on other test types beyond type 1). GRPE noted the need to ensure a modular approach in the Regulation on WLTP with a general module on common provisions and specific modules adding further regional requirements.

38. Regarding the way forward on the transposition process, the expert from EC expressed his preference for setting up a Task Force reporting to the IWG on WLTP, rather than a new IWG reporting directly to GRPE. He underlined the relevance to have all Contracting Parties to the 1958 Agreement involved since the beginning to avoid the difficult integration of new elements at a later stage. The experts from Japan and India expressed their intention to participate in the Task Force.

39. GRPE endorsed the establishment of a new Task Force under the IWG on WLTP to deal with the transposition of GTR No. 15 into Regulations to be annexed to the 1958 Agreement. The Chair of GRPE invited Japan and the European Union to submit, as technical sponsors for these activities, an informal document to the March 2016 sessions of WP.29 and AC.3 to amend the proposed mandate for Phase 2 activities (ECE/TRANS/WP.29/2016/29) by including the established Task Force on the transposition process.

40. GRPE acknowledged the progress made by the IWG on WLTP and noted the request of the group for a meeting room for one day during the GRPE week in June 2016. GRPE welcomed the new leading team for Phase 2 activities and acknowledged the contributions of Mr. K. Kobayashi and Mr. K. Kolesa who, after Phase 1B, will no longer continue as Vice-Chair and co-Technical Secretary of the IWG on WLTP. The Chair of GRPE mentioned that the continuation of Mr. S. Redmann as Chair of the IWG on WLTP for Phase 2 activities still needed to be confirmed.

V. Heavy duty vehicles (agenda item 4)

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

Documentation: ECE/TRANS/WP.29/GRPE/2016/6,
ECE/TRANS/WP.29/GRPE/2016/7
ECE/TRANS/WP.29/GRPE/2016/8
Informal documents GRPE-72-04 and GRPE-72-11

41. The expert from OICA presented ECE/TRANS/WP.29/GRPE/2016/6 to align the requirements on measurement equipment linearity verification in Regulation No. 49 with

the provisions in Regulation No. 96. He clarified that the term "stand-alone" equipment was self-explanatory and it could be used in Regulation No. 49 without any additional definition.

42. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/6 and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2016 sessions as draft Supplement 8 to the 05 series of amendments and draft Supplement 4 to the 06 series of amendments to Regulation No. 49.

43. The expert from OICA presented ECE/TRANS/WP.29/GRPE/2016/7 and GRPE-72-11 to adapt the requirements on fuel injection malfunction monitoring in Regulation No. 49 to the current state of technology and to align it with GTR No. 5.

44. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/7 amended by GRPE-72-11 as reproduced in Annex IV of this report and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2016 sessions as draft Supplement 4 to the 06 series of amendments to Regulation No. 49.

45. The expert from EC presented ECE/TRANS/WP.29/GRPE/2016/8 to correct documentation requirements for Off-Cycle Emissions in Regulation No. 49. The expert from OICA introduced GRPE-72-04 adding some new text to ECE/TRANS/WP.29/GRPE/2016/8 to clarify the structure of the documentation package.

46. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/8 amended by GRPE-72-04 as reproduced in Annex V of this report and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2016 sessions as draft Supplement 4 to the 06 series of amendments to Regulation No. 49.

B. GTR 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))

47. GRPE did not receive any new proposal to amend GTRs Nos. 4, 5 and 10.

48. The Chair invited the Contracting Parties to the 1998 Agreement to share information on the transposition process of Amendment 3 to GTR No. 4 and to further exchange information on the emissions of heavy duty vehicles equipped with hybrid powertrains and their environmental performance evaluation.

VI. Regulations Nos. 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems) and 133 (Recyclability of motor vehicles) (agenda item 5)

Documentation: ECE/TRANS/WP.29/GRPE/2016/5

49. The Chair of the IWG on Gaseous Fuelled Vehicles presented ECE/TRANS/WP.29/GRPE/2016/5 aimed at simplifying the communication model of approval for LPG and CNG retrofit systems in Regulation No. 115.

50. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/5 and requested the secretariat to submit it to WP.29 and AC.1 for consideration and vote at their June 2016 sessions as draft Supplement 7 to the original version of Regulation No. 115.

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

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

51. There were no proposals to amend Regulations Nos. 96 and 120.

B. GTR No. 11 (Non-road mobile machinery engines)

52. There were no proposals to amend GTR No. 11.

53. The expert from EC informed GRPE about the ongoing work at the European Union on the development of a new regulation on non-road mobile machinery engines.

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

Documentation: Informal document GRPE-72-22

54. The Chair of the IWG on PMP presented a status report (GRPE-72-22) on the activities of the group. He reported on the ongoing investigation on the measurement of exhaust particle emissions with a size below twenty-three nanometre and on the calibration of particle number measurement systems. He mentioned that the current PMP equipment specified in Regulation No. 83 could measure the number of particles with a size below twenty-three nanometre by properly changing the counting efficiency of the condensation particle counters, but he underlined the increased uncertainty of the measurements due to the presence of artefacts and particle losses, particularly when measuring particles of a size below ten nanometre. He explained that high dilution ratio helped reducing the artefacts but new technologies such as catalytic strippers would be recommended in this case. He continued his presentation on non-exhaust particle emissions as result of brake wear and the interaction between tyre and road. He explained that the good progress made on assessing particle emissions from brake systems may derive in a proposed test procedure in the future, whereas assessing tyre and road wear particle emissions was much more challenging. He added that it was likely to require more investigation due to the difficulty to separate tyre and road contribution.

55. GRPE noted the intention of the IWG on PMP to submit a summary report on the results of the investigation carried out on non-exhaust particle emissions at the next GRPE session in June 2016. GRPE acknowledged the progress made by the group.

IX. Gaseous Fuelled Vehicles (GFV) (agenda item 8)

Documentation: Informal documents GRPE-72-12 and GRPE-72-24

56. The Chair of the IWG on GFV introduced a status report (GRPE-72-24) on the activities of the group. He updated GRPE on the status of information exchange on GFV related issues in other forums such as the Working Parties on General Safety Provisions (GRSG) and on the Transport of Dangerous Goods (WP.15). He presented a new draft Regulation on the requirements for the type approval of retrofit systems intended to be installed on heavy duty diesel vehicles to enable its operation either in diesel mode or in dual-fuel mode (GRPE-72-12). He mentioned that some provisions were not yet finalized and that the scope of the original version of the Regulation would include Euro V and

Enhanced Environmentally friendly Vehicles (EEV). He explained that, similarly to Regulation No. 115, there should be a split between provisions at the UNECE level on the engine retrofit system and additional requirements at the national level on the examination or inspection of the complete installation of the system in the vehicle. He pointed out the complexity to consider within the new Regulation the installation manual of the engine retrofit system due to very different types and applications within heavy duty vehicles.

57. GRPE noted the intention of the IWG on GFV to submit an official document on a new Regulation on the requirements for the type approval of retrofit systems for heavy duty diesel vehicles at the next GRPE session, based on GRPE-72-12. GRPE acknowledged the work progress made by the group and noted the request for a meeting room for half a day during the GRPE week in June 2016.

X. Motorcycles and mopeds (agenda item 9)

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

Documentation: ECE/TRANS/WP.29/GRPE/2016/2
Informal documents GRPE-72-06, GRPE-72-13 and GRPE-72-16

58. The Chair of the IWG on EPPR presented a status report (GRPE-72-16) on the activities of the group. He announced the conclusion of the activities on the development of a new GTR on evaporative and crankcase emissions and he pointed at the development of a new GTR on OBD as the next priority. He expressed the intention of the group to submit an official document on the new GTR on OBD at the next GRPE session in June 2016 although no informal document had been made available for this session. He referred to EPPR-14-06 and EPPR-14-14 as existing documents at the IWG level for further details on the upcoming proposal. He mentioned that proposals on amendments to GTR No. 2 were scheduled for the year 2017.

59. The Chair of the IWG presented ECE/TRANS/WP.29/GRPE/2016/2 on a new GTR on evaporative and crankcase emissions for two- or three-wheeled motor vehicles equipped with a combustion engine as well as the modifications to the proposal introduced by GRPE-72-13. He introduced the technical report on the development of the new GTR (GRPE-72-06).

60. GRPE adopted ECE/TRANS/WP.29/GRPE/2016/2 as amended by Annex VI of this report and requested the secretariat to submit it to WP.29 and AC.3 for consideration and vote at their June 2016 sessions as a draft GTR on the measurement procedure for two- or three-wheeled motor vehicles equipped with a combustion engine with regard to the crankcase and evaporative emissions. GRPE also adopted the technical report (GRPE-72-06) as reproduced in Addendum 3 to this report and requested the secretariat to submit it to WP.29 and AC.3 for consideration and vote at their June 2016 sessions.

61. GRPE acknowledged the progress made by the IWG on EPPR and noted the request for a meeting room for one day during the GRPE week in June 2016. GRPE also acknowledged the contributions of Mr. P. Āsman and Mr. T. Vercammen who will no longer continue as Chair and Secretary of the IWG on EPPR. GRPE welcomed Mr. A. Perujo, Ms. D. Leveratto and Mr. H. Makhija, as new Chair and Secretaries respectively.

B. Regulations Nos. 40 (Emission of gaseous pollutants by motor cycles) and 47 (Emission of gaseous pollutants of mopeds)

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

C. GTR No. 2 (World-wide Motorcycle emissions Test Cycle (WMTC))

63. GRPE did not receive any new proposal to amend GTR No. 2.

**XI. Electric Vehicles and the Environment (EVE)
(agenda item 10)**

Documentation: Informal document GRPE-72-23

64. The Chair of the IWG on EVE presented a status report (GRPE-72-23) on the ongoing activities on data and information gathering. He informed GRPE about the expected outcome under each of the areas corresponding to Part A of the mandate: (i) a report on the determination of energy consumption as a result of the activities led by China, (ii) a report on battery ageing and durability led by Canada and the United States of America likely to be recommended to be used for the development of a new annex to GTR No. 15 on WLTP, and (iii) recommendations on the development of a new annex to GTR No. 15 on the determination of the power of electric vehicles as result of the activities led by Germany and Korea. He underlined the agreement reached between the IWGs on WLTP and EVE to ensure a proper coordination of work avoiding any duplication and overlap on the area of battery durability. He informed GRPE that the IWG on WLTP would take the lead on the determination of requirements to be applied to aged batteries and other components, whereas the IWG on EVE would concentrate on the determination of ageing techniques.

65. The Chair of GRPE proposed to develop new GTRs instead of annexes to GTR No. 15. He suggested the IWG on EVE to exchange information with the IWG on Electric Vehicles Safety (EVS) under the Working Party on Passive Safety (GRSP) to harmonize battery ageing techniques for safety and environment purposes, if suitable. The expert from Japan volunteered to report on this matter to the IWG on EVS.

66. GRPE noted the intention of the IWG on EVE to submit the results of Part A on data and information gathering as a basis to discuss the way forward at the next GRPE session in June 2016. GRPE acknowledged the progress made by the group and noted the request for a meeting room for half a day during the GRPE week in June 2016.

XII. Mutual Resolution No. 2 (M.R.2) (agenda item 11)

67. The secretariat informed GRPE about the adoption of M.R.2 by WP.29 and AC.3 at their November 2015 sessions. GRPE noted the intention of Germany and OICA to propose amendments to M.R.2 and, thus, requested the secretariat to keep this agenda item for the next GRPE session.

XIII. International Whole Vehicle Type Approval (IWVTA) (agenda item 12)

68. The secretariat informed GRPE about the extension of the mandate of the IWG on IWVTA under WP.29 until June 2017.

XIV. Vehicles Interior Air Quality (VIAQ) (agenda item 13)

Documentation: Informal document GRPE-72-21

69. The Chair of the IWG on VIAQ reported on the ongoing activities on collection of information and review of existing standards to develop recommendations to harmonize test procedures of interior air emissions generated from interior materials (GRPE-72-21). He explained some issues on which the group could reach an agreement such as test measurement modes to be considered (ambient, parking and driving modes) and substances to be measured (e.g. specific Volatile Organic Compounds). He listed some open issues on test procedure parameters which were still under discussion.

70. GRPE acknowledged the progress made by the IWG on VIAQ and noted the request for a meeting room for half a day during the GRPE week in June 2016.

XV. 1997 Agreement (Periodical technical inspections): Rule No. 1 (Environment protection) (agenda item 14)

71. GRPE did not receive any new proposal for amendments to Rule No. 1.

72. The Chair of GRPE recalled the existing IWG on Periodical Technical Inspections (PTI) under WP.29 aiming at aligning Rules Nos. 1 and 2 with the legislation of the European Union. He mentioned that these activities were currently ongoing at WP.29 level but inputs from GRs could be requested in the future. GRPE requested the secretariat to delete this agenda item for the time being.

XVI. Exchange of information on emission requirements (agenda item 15)

73. The expert from India gave an oral report on new regulatory developments on fuel efficiency for heavy duty vehicles taking place in her country. She informed GRPE about the possibility in India to move directly from Stage IV to Stage VI emission standards. She proposed to provide further details at the next GRPE session.

XVII. Any other business (agenda item 16)

74. GRPE noted no new information on this agenda item.

XVIII. Provisional agenda for the next session

A. Next GRPE session

75. The next GRPE session, including the IWGs meetings, is scheduled to be held in Geneva, Palais des Nations, starting on Monday, 6 June 2016, from 9.30 a.m. until Friday, 10 June 2016, at 5.30 p.m., subject to the confirmation by the secretariat (see GRPE-73-01, forthcoming). Interpretation would be provided from 7 June (2.30 p.m.) to 10 June (12.30 p.m.) 2016. Some delegates expressed their concerns on hosting the next GRPE session in Room V as shown by the calendar at the United Nations Office at Geneva (UNOG) webpage. GRPE requested the secretariat to look for another Room that fitted the expected number of participants for the next GRPE session.

B. Provisional agenda for the next proper GRPE session

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

1. Adoption of the agenda.
2. Report on the last session of the World Forum for Harmonization of Vehicle Regulations (WP.29).
3. Light vehicles:
 - (a) 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);
 - (b) Global technical regulation No. 15 on Worldwide harmonized Light vehicles Test Procedures (WLTP).
4. Heavy duty vehicles:
 - (a) Regulations Nos. 49 (Emissions of compression ignition and positive ignition (LPG and CNG) engines) and 132 (Retrofit Emissions Control devices (REC));
 - (b) 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)).
5. Regulations Nos. 85 (Measurement of the net power), 115 (LPG and CNG retrofit systems) and 133 (Recyclability of motor vehicles).
6. Agricultural and forestry tractors, non-road mobile machinery:
 - (a) Regulations Nos. 96 (Diesel emission (agricultural tractors)) and 120 (Net power of tractors and non-road mobile machinery);
 - (b) Global technical regulation No. 11 (Non-road mobile machinery engines).
7. Particle Measurement Programme (PMP).
8. Gaseous Fuelled Vehicles (GFV).
9. Motorcycles and mopeds:
 - (a) Regulations Nos. 40 (Emission of gaseous pollutants by motor cycles) and 47 (Emission of gaseous pollutants of mopeds);

- (b) Environmental and Propulsion Performance Requirements (EPPR) for L-category vehicles;
 - (c) Global technical regulation No. 2 (World-wide Motorcycle emissions Test Cycle (WMTC)).
10. Electric Vehicles and the Environment (EVE).
 11. Mutual Resolution No. 2 (M.R.2).
 12. International Whole Vehicle Type Approval (IWVTA).
 13. Vehicles Interior Air Quality (VIAQ).
 14. Exchange of information on emission requirements.
 15. Election of officers.
 16. Any other business.

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

77. The informal meetings were scheduled to be held as follows, subject to confirmation:

<i>Date</i>	<i>Group</i>	<i>Acronym</i>	<i>Time</i>
Monday, 6 June 2016	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR	9.30 a.m. – 12.30 p.m.
			2.30 p.m. – 5.30 p.m.
Tuesday, 7 June 2016	Worldwide harmonized Light vehicles Test Procedure	WLTP	9.30 a.m. – 12.30 p.m.
			2.30 p.m. – 5.30 p.m.
Wednesday, 8 June 2016	Vehicle Interior Air Quality	VIAQ	9.30 a.m. – 12.30 p.m.
	Gaseous Fuelled Vehicles	GFV	2.30 p.m. – 5.30 p.m.
	Electric Vehicles and the Environment	EVE	2.30 p.m. – 5.30 p.m.

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

Annex I

List of informal documents distributed without an official symbol

<i>GRPE-72-</i>	<i>Transmitted by</i>	<i>Title</i>	<i>Follow-up</i>
1	Secretariat	Informal meetings in conjunction with the GRPE (proper) session: schedule and rooms	A
2-Rev.1	WLTP	Technical report on the development of GTR No. 15 on WLTP including Phase 1b	B
3	Italy	Proposal for amendments to the 06 and 07 series of amendments to Regulation No. 83 (Emissions of M ₁ and N ₁ vehicles)	A
4	OICA	Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/8 on Regulation No. 49 (Compression ignition and positive ignition (LPG and CNG) engines)	B
5	OICA	ECE/TRANS/WP.29/2016/28 on amendments to the 07 series of amendments to Regulation No. 83 (Emissions of M ₁ and N ₁ vehicles)	A
6	EPPR	Technical report on the development of a new gtr on the measurement procedure for two- or three-wheeled motor vehicles equipped with a combustion engine with regard to the crankcase and evaporative emissions	B
7	Secretariat	General information	A
8	Secretariat	Highlights of the last WP.29 sessions (June and November 2015)	A
9-Rev.2	WLTP	Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/3 on WLTP Phase 1b	A
10-Rev.2	WLTP	Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/3 on WLTP Phase 1b (Consolidated version)	B
11	OICA	Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/7 on Regulation No. 49 (Compression ignition and positive ignition (LPG and CNG) engines)	B
12	GFV	Draft proposal for a new regulation for the approval of Heavy Duty Dual-Fuel Retrofit Systems (HDDF-RS) to be installed on heavy duty diesel engines and vehicles	A
13	EPPR	Proposal for amendments to ECE/TRANS/WP.29/GRPE/2016/2 on a new global technical regulation on the measurement procedure for two- or three-wheeled motor vehicles equipped with a combustion engine with regard to the crankcase and evaporative emissions	B
14	EC	Proposal for amendments to the 06 series of amendments to Regulation No. 83 (Emissions of M ₁ and N ₁ vehicles)	C
15	EC	Proposal for amendments to the 07 series of amendments to Regulation No. 83 (Emissions of M ₁ and N ₁ vehicles)	C

<i>GRPE-72-</i>	<i>Transmitted by</i>	<i>Title</i>	<i>Follow-up</i>
16	EPPR	Status report	A
17-Rev.1	Secretariat	Updated provisional agenda (including all informal documents)	A
18	EC	Transposition of WLTP into EU Regulations and UN/ECE Regulations	A
19	WLTP	Status report	A
20	WLTP	WLTP Phase 2 working items and schedule	A
21	VIAQ	Status report	A
22	PMP	Status report	A
23	EVE	Status report	A
24	GFV	Status report	A

Notes:

- A Consideration by GRPE completed or to be superseded.
- B Adopted and submitted to WP.29.
- C Resume consideration on the basis of an official document.

Annex II

Informal meetings held in conjunction with the GRPE session

<i>Date</i>	<i>Time</i>	<i>Group</i>	<i>Acronym</i>
11 January 2016	9:30 a.m. - 12:30 p.m.	Electric Vehicles and the Environment	EVE
	2:30 p.m. - 5:30 p.m.	Worldwide harmonized Light vehicles Test Procedure	WLTP
12 January 2016	9:30 a.m. - 12:30 p.m.	Worldwide harmonized Light vehicles Test Procedure	WLTP
	9:30 a.m. - 12:30 p.m.	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR
	2:30 p.m. - 5:30 p.m.	Worldwide harmonized Light vehicles Test Procedure	WLTP
	2:30 p.m. - 5:30 p.m.	Environmental and Propulsion Performance Requirements of L-category vehicles	EPPR
13 January 2016	9:30 a.m. - 12:30 p.m.	Gaseous Fuelled Vehicles	GFV
	9:30 a.m. - 12:30 p.m.	Particulate Measurement Programme	PMP
	9:30 a.m. - 12:30 p.m.	Vehicle Interior Air Quality	VIAQ

Annex III

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	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 Kazuyuki Narusawa (vice-Chair), narusawa@ntsel.go.jp	Andrew Giallonardo, Andrew.Giallonardo@ec.gc.ca	November 2018
Gaseous Fuelled Vehicles (GFV) (group)	André Rijnders, arijnders@rdw.nl	Jeffrey Seisler, jseisler@cleanfuelsconsulting.org Salvatore Piccolo, s.piccolo@federchimica.it	June 2016
Heavy Duty Dual-Fuel Task Force (HDDV TF) (task force)	Henk Dekker, henk.j.dekker@tno.nl	Jeffrey Seisler, jseisler@cleanfuelsconsulting.org	
Liquefied Natural Gas Task Force (LNG TF) (task force)	Paul Dijkhof, Paul.Dijkhof@kiwa.nl	Jeffrey Seisler, jseisler@cleanfuelsconsulting.org Jaime Del Alamo, jaime.alamo@ngvaeurope.eu	
Particle Measurement Programme (PMP) (group)	Giorgio Martini, giorgio.martini@jrc.ec.europa.eu	Caroline Hosier, chosier@ford.com	June 2017
Vehicle Interior Air Quality (VIAQ) (group)	Jong Soon Lim jongsoon@ts2020.kr Yunshan GE (vice-Chair), geyunshan@163.com	Andreas Wehrmeier, andreas.wehrmeier@bmw.de	November 2017
Worldwide harmonized Light vehicles Test Procedure (WLTP) – Phase 1B (group)	Stephan Redmann, stephan.redmann@bmvbs.bund.de Kazuki Kobayashi (vice-Chair), ka-koba@shinsa.ntsel.go.jp	Noriyuki Ichikawa (co-Technical Secretary), noriyuki_ichikawa@mail.toyota.co.jp Konrad Kolesa (co-Technical Secretary), konrad.kolesa@audi.de	June 2016
Worldwide harmonized Light vehicles Test Procedure (WLTP) – Phase 2 (group)	Stephan Redmann (to be confirmed), stephan.redmann@bmvbs.bund.de 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	December 2019

Annex IV

Amendments to Regulation No. 49 on fuel injection malfunction monitoring

Adopted on the basis of ECE/TRANS/WP.29/GRPE/2016/7 and GRPE-72-11 (see para. 44)

Annex 9A, paragraphs 2.3.1., amend to read:

"2.3.1. Malfunctioning injectors

As an alternative to the monitor specified in line (d) of the table in item 7 of Appendix 3 to Annex 9B to this Regulation, the manufacturer may opt for compliance with the provisions specified in paragraphs 2.3.1.1. to 2.3.1.2.1. of this Annex."

Annex 9B, Appendix 3, Item 7, amend to read:

"Fuel System monitoring

The OBD system shall monitor the following elements of the fuel system on engines so-equipped for proper operation:

	<i>Diesel</i>	<i>Gas</i>
(a) Fuel system pressure control: fuel system ability to achieve the commanded fuel pressure in closed loop control - performance monitoring.	X	
(b) Fuel system pressure control: fuel system ability to achieve the commanded fuel pressure in closed loop control in the case where the system is so constructed that the pressure can be controlled independently of other parameters - performance monitoring.	X	
(c) Fuel injection timing: fuel system ability to achieve the commanded fuel timing for at least one of the injection events when the engine is equipped with the appropriate sensors - performance monitoring.	X	
(d) Fuel injection quantity: fuel system ability to achieve the commanded fuel quantity by detecting errors from desired fuel quantity in at least one of the injection events when the engine is equipped with the appropriate sensors (e.g. in pre- main- or post-injection) – emission threshold monitoring.	X	
(e) Fuel injection system: ability to maintain the desired air-fuel ratio (incl. but not limited to self-adaptation features) – performance monitoring.		X

"

Annex V

Amendments to Regulation No. 49 on documentation requirements for Off-Cycle Emissions

Adopted on the basis of ECE/TRANS/WP.29/GRPE/2016/8 and GRPE-72-04 (see para. 46)

Annex 10, paragraph 11., amend to read:

"11. Documentation

The Type Approval Authority ~~may decide to~~ **shall** require that the manufacturer provides a documentation package. This should describe any element of design and emission control strategy of the engine system and the means by which it controls its output variables, whether that control is direct or indirect.

The information ~~may~~ **shall** include a full description of the emission control strategy. In addition, this ~~could~~ **shall** include information on the operation of all AES and BES, including a description of the parameters that are modified by any AES and the boundary conditions under which the AES operate, and indication of which AES and BES are likely to be active under the conditions of the test procedures in this annex.

This information shall be made available in the "extended documentation package" according to the documentation requirements specified in paragraph 5.1.4."

Annex VI

Amendments to ECE/TRANS/WP.29/GRPE/2016/2

Adopted on the basis of GRPE-72-13 (see para. 60)

In ECE/TRANS/WP.29/GRPE/2016/2,

Section I (Statement of technical rationale and justification),

Paragraph 8., amend to read:

"8. At the seventy-second GRPE session in January 2016, a formal proposal for this new UN gtr was tabled for adoption. **Subsequently the proposal was submitted to the June 2016 session of WP.29 for adoption** by the Executive Committee for the 1998 Agreement (AC.3)."

Paragraph 19., amend to read:

"19. ... Finally it was agreed to put "category 3" vehicles in paragraph 2. of the UN gtr, to reference S.R.1 in a footnote and to state the following with respect to the classification of a three-wheeled vehicle:

"With regard to a three-wheeled vehicle of category 3-4 or 3-5, Contracting Parties agree that at a minimum the following criteria should be taken into account for vehicle classification:

- (a) In their straight-ahead condition, motor vehicles having two wheels which are placed on the same straight line and equipped with one sidecar; or
- (b) Motor vehicles having a saddle-type seat, a handle-bar type steering system and three wheels, on which the side of the driver's seat is of open structure.";
- ~~(c) Motor vehicles complying with the following criteria:
 - ~~(i) Three wheels; and~~
 - ~~(ii) In which the arrangement of the wheels is symmetric with respect to the longitudinal centreline of the vehicle; and~~
 - ~~(iii) The distance between the lines passing through the centres of the ground contact sections of the outermost wheels on the axle on the same line is less than 460 mm; and~~
 - ~~(iv) Constructed to turn with part or all of the wheels and vehicle body inclined."~~~~

Insert new paragraph 25., to read:

"25. With respect to the family definition of category B permeation testing of the fuel storage and delivery system, it is assumed that in principle similar family criteria apply than for category C SHED testing although this evaporative test procedure of category B only assesses part of the whole vehicle in terms of evaporative emissions and therefore only assesses part of the possible sources from which hydrocarbons can escape into the atmosphere without being combusted. The fuel storage and delivery system refers to the assembly of all possible components that help to store and transport petrol up to and including the point where the petrol enters the air/fuel mixing and atomising device positioned in the intake airflow. Any gaseous fuel storage

and supply system component does not make part of the scope of the evaporative emission assessment in category B permeation testing. Where the design of this storage and supply system includes a system for petrol vapour storage and control, the family classification criteria 2.1.1. to 2.1.3. apply. However, if the vehicle is not fitted with the system/components mentioned in Table A6/1 of Section II, such criteria need not be considered for family definition for the vehicle."

Paragraphs 25. to 31. (former), renumber as paragraphs 26. to 32.

Paragraph 32., amend to read:

"32. At the time of writing this revision of the UN gtr, the data is not available to undertake a full impact assessment of the test procedures contained. Specific cost effectiveness values in markets around the globe can be quite different, depending on the national or regional market situation. While there are no calculated values here, the belief of the technical group is that there are clear and significant benefits comparing to low anticipated cost increases associated with this UN gtr.}"

Section II (Text of the global technical regulation),

Paragraph 2., amend to read:

"2. Scope and application

Two- and three-wheeled vehicles of category 3¹ equipped with a ~~PI-engine~~
propulsion unit in accordance with Table 1:

¹ TRANS/WP.29/1045, as amended by Amends. 1 and 2

Table 1
Scope with regard to the propulsion unit and fuel type

Propulsion unit and fuel type				Test type III	Test type IV
Vehicle with PI engine	Mono-fuel*	Petrol		Yes	Yes*
		LPG		Yes	No
		NG / Biomethane		Yes	No
		Hydrogen		Yes	No
	Bi-fuel	Petrol	LPG	Yes	Yes (petrol only)*
		Petrol	NG / Biomethane	Yes	Yes (petrol only)*
		Petrol	Hydrogen	Yes	Yes (petrol only)*
	Flex-fuel	Petrol	Ethanol (E85)	Yes	Yes (petrol only)*
		NG / Biomethane	HCNG	Yes	No
	Vehicle with CI engine	Flex-fuel	Diesel	Bio-Diesel	Yes
Mono-fuel		Diesel		Yes	No
Pure electric vehicle or vehicle propelled with compressed air (CA)				No	No
Hydrogen Fuel cell vehicle				No	No

* Type IV test is not applicable for a vehicle in the scope of this UN gtr that is designed primarily for permanent running on LPG or NG / bio-methane or hydrogen, having a petrol system, with a petrol fuel tank capacity not exceeding two litres in the case of ~~two and three wheeled vehicles of category 3~~ **two-wheeled motorcycles and motorcycles with sidecar** and not exceeding three litres in the case of ~~a 3-2 and 3-5 category~~ **three-wheeled** vehicles, intended for emergency purposes or starting only."

Paragraphs 3.4. and 3.5., amend to read:

"3.4. ~~"Fuel storage~~ **Fuel tank breathing losses**" means hydrocarbon emissions caused by temperature changes in the ~~fuel storage~~ **fuel tank**;

3.5. "Fuel tank" means a type of energy storage system that stores the ~~[liquid]~~ fuel;"

Paragraph 3.7., amend to read:

"3.7. ~~"Non-exposed"~~ type of fuel tank ~~and delivery system~~ means that the **fuel tank storage and fuel delivery system**, except the fuel tank cap, are not directly exposed to radiation of sunlight;"

Paragraph 7.1.3., amend to read:

"7.1.3. The evaporative emission test procedure laid down in Annex 2 sets out the test method for the determination of the loss of hydrocarbons by permeation from the fuel storage and ~~supply~~ **delivery** system of a vehicle equipped with a propulsion unit type that uses volatile, liquid fuel."

Paragraph 7.2.1., amend to read:

"7.2.1. The vehicle manufacturer shall prove to the approval authority of the Contracting party or its designated agency that the fuel storage and ~~supply~~ **delivery** system are leak-tight in accordance with paragraph 7.2.2."

Paragraph 7.2.3.2., amend to read:

"7.2.3.2. Class B; the test procedure in Annex 2 sets out the permeation test procedures of the fuel storage and **supply delivery** systems."

Table 3, amend to read:

"Table 3

Evaporative emission test class

Test	Evaporative emissions test class			SHED type
	A	B	C	
Permeability test of a non-metallic fuel tank as component	✓			
Permeation test of the fuel storage and supply delivery system		✓		
SHED test of the whole vehicle, short diurnal test (fuel temp. change)			✓	S _{FV} ⁽¹⁾
SHED test of the whole vehicle, hot soak loss test			✓	S _{FV} ⁽¹⁾

⁽¹⁾ S_{FV} Fixed volume SHED

SHED Sealed Housing for Evaporative Determination

The fixed volume SHED is the minimum requirement. The tests may be carried out in a variable volume SHED."

Paragraph 7.2.5., amend to read:

"7.2.5. Test fuel

The appropriate test fuel, as defined in ~~Annex 2~~ **Table 6-1** of UN gtr No. 2 (type: ~~Petrol E0~~) and or Annex 8. of this UN gtr (types: ~~Petrol E5 and Petrol E10~~); shall be used, as decided by the Contracting Party."

Annex 2,

Figure A2/1 (title), amend to read:

"Figure A2/1

Fuel ~~storage~~ tank permeation full and short tests"

Paragraph 3., amend to read:

"3. Preconditioning fuel soak for the fuel storage and **supply delivery** system permeation test

To precondition the fuel tank in the fuel storage and **supply delivery** system permeation test, the following five steps shall be followed:"

Paragraph 4., amend to read:

"4. Fuel ~~storage~~ tank permeation test procedure

To run the test, the following steps shall be taken for a fuel tank preconditioned as specified in paragraph 3."

Paragraph 5., amend to read:

"5. Fuel ~~storage~~ tank permeation test result calculation"

Annex 3,

Figure A3/1 (title), amend to read:

"Figure A3/1

Fuel storage tank permeation full and short tests Flow chart – SHED test procedure"

Paragraph 4.2.2., amend to read:

"4.2.2. **Before switching off the engine,** ~~the~~ test vehicle is placed on a chassis dynamometer and driven a single time through the applicable {Type I} test cycle specified ~~before switching off the engine.~~"

Paragraphs 4.2.2.2. and 4.2.2.2.1., amend to read:

"~~4.2.2.2.~~ Alternatively to 4.2.2.1. for three-wheeled vehicles in the scope of this UN gtr at the choice of the Contracting Party the applicable Type I test set out in the national regulation of the Contracting Party under the following conditions:

~~4.2.2.2.1.~~ ~~The oil temperature of the engine reaching its warm operational temperature and a total accumulated test type I time of 780 s after start; or~~ **It shall first be ensured that the engine reaches its warm operational condition with a minimum accumulated Type I test time of 780 s after start. In case the prescribed Type I test time is less than 780 s, the running shall be continued till at least 780 s is elapsed.**"

Paragraph 4.2.2.2.2., shall be deleted.

Paragraph 4.2.2.2.3., renumber as paragraph 4.2.2.2.2. and amend to read:

"~~4.2.2.2.2.~~ By means of exemption, a base two-wheeled motorcycle equipped with a sidecar may be approved based on the type IV evaporative emission test results of the base two-wheeled motorcycle."

Annex 6,

Table A6/1, amend to read:

"Table A6/1

Classification criteria propulsion family with regard to test type IV

No.	Classification criteria description	Test type IV
1.	Vehicle	
1.1.	Category; Note: Two-wheeled motorcycles and two-wheeled motorcycles with sidecars are considered to be of the same family	X
1.2.	Subcategory if applicable and per the classification followed by the Contracting Party; Note: may become applicable after S.R.1 includes subcategories	X
2.	System ¹	

No.	Classification criteria description	Test type IV
	[Note:]Applicability of evaporative emission test class A, B or C, subject to provisions of paragraph 7.2.4.4. of Section II;	X
2.1.	Propulsion (not) equipped with evaporative emission control system	X
2.1.1.	Evaporative emission control system type;	X
2.1.2.	Operation principle of evaporative emission control system (active / passive / mechanically or electronically controlled);	X
2.1.3.	Identical basic principle of fuel/air metering (e.g. carburettor / single point injection / multi point injection / engine speed density through MAP/ mass airflow);	X
2.1.4.	Identical material of the fuel tank; Note: material of all metallic fuel tanks are considered to be identical.	X
2.1.5.	Liquid fuel hoses are identical and the surface area is lower;	X
2.1.6.	The fuel storage capacity declared by the manufacturer is within a range of +10 / - 50 % of the nominal fuel tank volume If the approval authority determines that, with regard to the fuel storage capacity, the parent vehicle does not fully represent the family, an alternative or additional vehicle may be selected.	X
2.1.7.	The fuel storage relief valve pressure setting is identical or higher;	X
2.1.8.	Identical method of storage of the fuel vapour (i.e. trap form, storage medium, air cleaner (if used for evaporative emission control) etc.);	X
2.1.9.	Identical or higher volume of the carbon canister ¹² ;	X
2.1.10.	Identical method of purging of the stored vapour (e.g. air flow, purge volume over the driving cycle);	X
2.1.11.	Identical method of sealing and venting of the fuel metering system;	X

¹ **Applicability of evaporative emission test class A, B or C, subject to provisions of paragraph 7.2.4.4. of Section II.**

¹² Or the canister with HC absorbent material or other equivalent"

Paragraphs 3.1. and 3.2., amend to read:

- "3.1. In the case of evaporative emission classes B and C, the details are given in Table A6/1.
- 3.2. In the case of evaporative emission class A, the details are given at Nos. 2.1., 2.1.4. and 2.1.6. in Table A6/1."

Annex 7,

Paragraph 2, item 2.2.8., amend to read:

"2.2.8. Schematic drawing of the fuel ~~storage~~ tank with indication of capacity and material:"

Paragraph 2, items 2.2.21. and 2.2.21.1., amend to read:

"2.2.21. Type IV, Fuel storage and ~~supply~~ **delivery** system permeation test (yes / no)

2.2.21.1. Result fuel ~~storage~~ tank (mg / m²/ day):"
