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Working Party on the Construction of Vehicles

Working Party on Pollution and Energy (GRPE)

REPORT OF THE WORKING PARTY ON POLLUTION AND ENERGY
ON ITS THIRTY-SEVENTH SESSION
(12 - 15 January 1999)

ATTENDANCE

1. GRPE held its thirty-seventh session from 12 January (afternoon) to 15 January (morning) 1999 ^{1/} under the chairmanship of Mr. B. Gauvin (France). Experts from the following countries participated in the work: Belgium; Czech Republic; Denmark; Finland; France; Germany; Greece; Hungary; Italy; Netherlands; Norway; Poland; Romania; Russian Federation; Slovenia; Spain; Sweden; Switzerland; Ukraine; United Kingdom; United States of America. Experts from the European Commission (EC) also participated. Representatives of Japan took part in the session under paragraph 11 of the Commission's Terms of Reference. Experts from the following non-governmental organizations also participated: International Organization for Standardization (ISO); International Touring Alliance/International Automobile Federation (AIT/FIA); International Organization of Motor Vehicle Manufacturers (OICA); International Motorcycle Manufacturers Association (IMMA); Liaison Committee for the Manufacture of Automobile Equipment and Spare Parts (CLEPA); European Association of Internal Combustion Engine Manufacturers (EUROMOT); Automobile Emissions Control by Catalysts (AECC/CEFIC); European LPG Association (AEGPL); European Natural Gas Vehicle Association (ENGVA).

^{1/} Following the decision taken by GRPE at its thirty-sixth session (TRANS/WP.29/GRPE/36, para. 46.), two separate informal meetings, with interpretation services, were held prior to the thirty-seventh GRPE session proper.

2. The informal meeting on particulate emissions was held on 12 January 1999, afternoon only, under the chairmanship of Mr. M. Dunne (United Kingdom) and Mr. T. Baines (United States of America). Experts from the following countries and organizations participated in the work: Belgium; Czech Republic; Denmark; Finland; Germany; Hungary; Italy; Japan; Netherlands; Norway; Poland; Romania; Russian Federation; Slovenia; Spain; Sweden; Switzerland; Ukraine; United Kingdom; United States of America; European Community (EC); International Organization for Standardization (ISO); International Touring Alliance/International Automobile Federation (AIT/FIA); International Organization of Motor Vehicle Manufacturers (OICA); European Automobile Manufacturers Association (ACEA); Liaison Committee for the Manufacture of Automobile Equipment and Spare Parts (CLEPA); European Association of Internal Combustion Engine Manufacturers (EUROMOT); Automobile Emissions Control by Catalysts (AECC/CEFIC); European LPG Association (AEGPL); A summary of the proceedings of this informal meeting is given below (paras. 59 to 68).

3. The fifth informal meeting of the GRPE working group on the world-wide heavy-duty certification procedure (WHDC) was held on 13 January 1999, under the chairmanship of Mr. C. Havenith (Netherlands). Experts from the following countries and organizations participated in the work: Belgium; Czech Republic; Denmark; Finland; Germany; Hungary; Italy; Japan; Netherlands; Norway; Poland; Romania; Russian Federation; Slovenia; Sweden; Switzerland; Ukraine; United Kingdom; United States of America; European Community (EC); International Organization for Standardization (ISO); International Touring Alliance/International Automobile Federation (AIT/FIA); International Organization of Motor Vehicle Manufacturers (OICA); European Automobile Manufacturers Association (ACEA); Liaison Committee for the Manufacture of Automobile Equipment and Spare Parts (CLEPA); European Association of Internal Combustion Engine Manufacturers (EUROMOT); Automobile Emissions Control by Catalysts (AECC/CEFIC); European LPG Association (AEGPL); A summary of the proceedings of this informal meeting is given below (paras. 4 to 12).

REGULATION No. 49 (Emissions of C.I., NG and P.I. (LPG) engines)

(a) Development of the emission testing procedure

4. The Chairman of the WHDC group informed GRPE that the minutes of the fourth WHDC meeting (Geneva, 3 June 1998, see TRANS/WP.29/GRPE/36, paras. 4-12) had been approved by the WHDC group. After that he reported orally on the results of the fifth meeting of WHDC held on 13 January 1999 in the afternoon, following the morning session which had been devoted to the sub-group on "Fundamental Elements (FE)".

5. He recalled that, during the meeting held in June 1998, it had been agreed to consider the draft proposal prepared jointly by the experts from TNO (The Netherlands) and TÜV (Germany), entitled "Development of a world-wide heavy duty engine test cycle" as the reference working basis and that the relevant project had been approved in September 1998. He noted that, after a slow start, in October 1999, the collection of world-wide driving pattern data had become faster and that final results should be available by April 2000. He reported that a particular effort would be necessary to make the future test procedure safe against cycle by-passing or beating and that results on this matter should also be available before the completion of the project.

6. Recalling the political agreement reached in December 1998 in the EU Council on a draft proposal for a European Parliament and Council Directive on

heavy duty vehicle emissions, amending Directive 88/77/EEC, (see paras. 13 to 16 below), it was agreed that WHDC should consider in its future work subjects concerning on board-diagnostics (OBD), durability and after-treatment systems and that the group should also aim towards environmental and economic benefits.

7. The WHDC group Chairman also acknowledged the spirit of cooperation in the work of the group shown by the delegates of the United States of America, although, in the absence of any official mandate from their Government, they remained observers, and expressed his wish that the United States of America consider a full membership in the future. He also noted the fruitful cooperation between the European Union and the Japanese research institutes with particular regard to ISO activities (see para. 9. below). In this respect, the expert from Japan informed GRPE that his Government was pleased to invite WHDC working groups to convene their next meeting in Tokyo from 14 to 16 April 1999.

8. The Chairman of WHDC group concluded his introduction by saying that all sub-groups had made positive progress. He thanked the expert from the European Commission for his presentation concerning the latest developments in the EU on the proposal for a draft Directive on heavy duty vehicle emissions, and he also thanked OICA who had decided to support 90 per cent of the sub-group "ISO Activities" budget.

9. The WHDC group had also received the progress report by the Chairman of the "ISO Activities" sub-group, Mr. H.J. Stein (OICA). For both ISO Working Groups (ISO TC 22/SC5/WG2 on Exhaust Emission Measurement and ISO TC 22/SC5/WG9 on Engine Family), he had provided summaries of the meetings held so far and confirmed the wide international cooperation. He explained that, in WG 2, two correlation studies had been started at EMPA (Switzerland) and at JARI (Japan) and that the first results would be made available for the next GRPE session (May 1999). With regard to WG 9, he said that a first working draft entitled "Road vehicles - engine family for homologation" had been formulated and that the definition of the parent engine would be considered at a later stage. The expert from ISO confirmed the intention of his organization to present the available results of the above working groups at the next GRPE session.

10. The expert from the United States of America confirmed the active participation of his country in the ISO Activities subgroup whilst he acknowledged the opportunity to continue his participation in WHDC and the Fundamental Elements sub-group as an observer. He suggested that the WHDC work programme should be reviewed to take account of the latest agreement reached in the EU Council (see paras. 13 to 16 below).

11. The expert from OICA confirmed the decision taken by his organization to fund the ISO Activities sub-group (about 155,000 euros) and welcomed the intention of the European Commission to take into account the discussions towards a world-wide harmonized test cycle. In this respect, the expert from the European Commission confirmed that the Council and the European Parliament had agreed on the importance of a world-wide harmonized cycle and of OBD for heavy duty vehicles.

12. GRPE noted the progress report of the WHDC group and agreed that the seventh meeting of this group should be held on 26 May 1999, the second day of the thirty-eighth GRPE session (see para. 73. below).

(b) Approval of vehicles equipped with LPG- and NG-fuelled engines

Documentation: TRANS/WP.29/GRPE/1998/14; informal document No. 11 of the annex to this report.

13. The expert from the European Commission informed GRPE that the European Parliament had delivered in the first reading in October 1998 its opinion on the proposal of the European Commission to amend Directive 88/77/EEC and that the Council had formulated a political agreement on 21 December 1998 (informal document No. 11). He said that the proposal included a reduction of 30 per cent over the current levels for the emission limits to be applied from October 2000 and the extension of the scope to cover gas-fuelled engines. The proposal also included new test cycles: the European Steady State Cycle (ESC), plus the European Load Response test (ELR), and the European Transient Cycle (ETC), and different engine technologies were proposed to be tested on different cycle combinations.

14. In particular, the emissions are to be determined in the ESC and ELR tests for conventional diesel engines, including those with electronic fuel injection equipment, exhaust gas recirculation (EGR) and/or oxidation catalysts, while diesel engines fitted with advanced exhaust after-treatment systems including deNOx catalysts and/or particulate traps are to be additionally tested on the ETC cycle. As regards gas-fuelled engines, the gaseous emissions are to be determined in the ETC test but particulate emission should not be subject to testing. Furthermore, gas fuelled engines should be subject to specific separate limits for non-methane hydrocarbons and methane and a range of reference fuels for NG and LPG was specified (see paras. 18 and 19 below).

15. As regards emission limits to be applied from October 2005, the EU Council agreed on a mandatory stage that sets stringent particulate limits of 0.02 gr/kWh for engines tested under the ESC cycle and of 0.03 g/kWh for engines tested in the ETC cycle. From 2008, the NO_x limits should be lowered to 2 g/kWh (but subject to a Commission review by the end of 2002 that will take into account the development of technology). The proposal for emission target limits reflecting the best available technology and applicable to a class of vehicles known as "Enhanced Environmentally Friendly Vehicle" (EEV) had been adopted by the Commission and supported by the Council.

16. The expert from the European Commission also informed GRPE that, at the end of 1999, the Commission would bring forward a proposal to introduce prescriptions on OBD, durability and in-use conformity testing on the basis of the results of the Auto-Oil II programme and taking into account progress in the discussions towards a world-wide harmonized test cycle. In concluding his presentation, he said that the European Parliament could complete a second reading of the proposal by the end of February 1999 and that, soon after, the Directive could be adopted provided that no conciliation between the Council and the European Parliament would be necessary.

17. In view of the above information, GRPE agreed that Regulation No. 49 would need to be amended in line with the EC Directive (88/77/EEC) amendment proposal as soon as the latter was approved. In this respect, the proposal from ENGVA (TRANS/WP.29/GRPE/1998/14) to adopt non-methane hydrocarbon emission limits for natural gas fuelled vehicles was considered superseded by the decisions agreed in the EC (see para. 14.). It was also agreed not to insert this item in the agenda of the next session.

1.3. Reference fuels

Documentation: TRANS/WP.29/GRPE/R.275/Rev.1; TRANS/WP.29/GRPE/1998/11; TRANS/WP.29/GRPE/1999/1; TRANS/WP.29/GRPE/1999/5; informal document No. 11 of the annex to this report.

18. The expert from the European Commission informed GRPE (informal document No. 11) that the reference fuels characteristics contained in the proposal to amend Directive 88/77/EEC (see para. 13.) had also been agreed by the EU Council. He said that the natural gas reference fuel G₂₀ (100 per cent of methane) which is one of the three fuels that can be used for type-approval testing of gas engines to the limit value applicable from October 2000, might not be extreme enough with regard to the lambda-shift factor in order to cover certain gas compositions available in the market; therefore, and for the purposes of testing an engine to the EEV target values only (see para. 15. above), it was proposed that reference fuel G₂₀ be replaced with fuel G_R.

19. GRPE was informed that the Commission had also proposed an amendment to the LPG reference fuel specifications to cover a broad enough range in order to account for the possible use of any grade of LPG fuel in engines when a vehicle is in service.

20. With regard to new types of alternative fuels, a new annex would be added to the proposed Directive to ensure harmonization of the technical requirements specific to their use and to amend, where necessary, the basic measurement sampling procedures specific to any new alternative fuel.

21. GRPE agreed to take account of the proposals regarding reference fuels in aligning Regulation No. 49 to the corresponding EC Directive 88/77/EEC, as amended. It was also agreed not to consider this item in the agenda of the next session.

22. In a written statement, referring to the report of the last session (TRANS/WP.29/GRPE/36, paras. 11 and 29), the expert from CONCAWE, who could not attend the current session, requested the secretariat to record his following comments:

Re.para. 11.: ".....The expert from the EC confirmed that a joint proposal by the engine and fuel industry will be considered for the reference fuels expected to reflect the average market qualities."

Re. para. 29.: ".....and manufacturers. In response to the OICA expert's statement on the importance of low sulphur fuel for CO₂ reduction with new vehicle technologies, the expert from CONCAWE commented that such technologies are still in an early development stage and that a technical documentation on a required fuel sulphur level is not yet available."

AMENDMENTS TO ECE REGULATIONS WITH RESPECT
TO LPG- AND NG-FUELLED VEHICLES/ENGINES

(a) Regulation No. 67 (Equipment for liquefied petroleum gas)

Documentation: TRANS/WP.29/R.808; TRANS/WP.29/1998/31 and Add.1; TRANS/WP.29/1998/63; TRANS/WP.29/GRPE/1999/7.

23. The secretariat informed GRPE that, during its last session held in November 1998, WP.29 had adopted a proposal for draft Supplement 2 to Regulation No. 67 (TRANS/WP.29/656). The proposal, which had been based on the first three above-mentioned documents, incorporated also results from an ad hoc meeting chaired by Mr. C. Lomonaco held in Rome on 21 July 1998, where a solution to technical problems relating to provisions for temperature triggered pressure relief devices, intended to avoid tank explosions in fires, had been found.

24. GRPE agreed on the proposition of its Chairman that consideration of any further amendments to Regulation No. 67 may only continue after the entry into force of Supplement 2 to this Regulation. Because this was expected in the second half of 1999, it was agreed that Regulation No. 67 should not appear in the agenda for the next session.

(b) Proposal for a draft Regulation concerning the specific equipment of motor vehicles fuelled by compressed natural gas (CNG)

Documentation: TRANS/WP.29/1998/33; TRANS/WP.29/1998/64; TRANS/WP.29/1998/68 and Add.1; informal documents Nos. 3 and 9 of the annex to this report.

25. The secretariat informed GRPE that, during the one-hundred-and-sixteenth session of WP.29, the proposal for a draft Regulation could not be submitted to the vote of AC.1 because the EC representative had not yet received authorization to vote (TRANS/WP.29/640, paras. 8 to 10 and 110). The Chairman expressed the wish that the necessary internal procedures inside the European Commission would be completed and that EC would be prepared to vote during the next AC.1 session in March 1999.

26. The expert from OICA presented informal document No. 3 based on some comments made during the thirty-sixth session of GRPE (TRANS/WP.29/GRPE/36, para. 37.) relating to some corrections to the draft Regulation. He recalled that the amendment concerning paragraph 17.4.3. had already been agreed during

the thirty-fifth session of GRPE (TRANS/WP.29/GRPE/35, annex 5, para.17.4.3.). In this respect, the Chairman requested the secretariat to produce an official document to be submitted to WP.29 and AC.1 of March 1999 as a corrigendum to the draft Regulation, relating to paragraph 17.4.3. only as proposed by OICA.

27. The expert from the Netherlands introduced informal document No. 9 concerning some amendments to the definition of an automatic cylinder valve. The expert from Greece fully supported this proposal by the Netherlands. The expert from Italy suggested to modify paragraph 17.5.1. as follows:

"17.5.1.1 An automatic valve shall be installed directly on each container".

28. GRPE agreed to continue the consideration of this matter at the next session provided that the draft Regulation would be adopted by AC.1 during the session of March 1999 and requested the secretariat to produce an official document for the next session which should incorporate the text of informal documents Nos. 3, with the exception of the amendment concerning paragraph 17.4.3.(see para. 26. above), and 9, and the proposal from Italy (see para. 27. above).

(c) Proposal for a draft Regulation concerning retrofit systems for LPG and CNG

Documentation: TRANS/WP.29/GRPE/R.279; TRANS/WP.29/GRPE/1998/12; TRANS/WP.29/GRPE/1999/2; TRANS/WP.29/GRPE/1999/3; informal documents Nos.6, 6/Rev.1 and 8 of the annex to this report.

29. The expert from Italy introduced informal documents Nos.6 and 6/Rev.1 and explained that the former had been drafted together with the expert from the Netherlands to take account of the latest development in the European Union, where Directive 98/77/EC had been published recently. In particular, he said that the amendments proposed were aimed to harmonize the vehicle family concept between vehicles originally fitted with LPG or CNG equipment and retrofitted vehicles. He added that, during the session, a restricted working group had been held comprising experts from France, Italy, the Netherlands and Poland, and that the text of informal document No.6/Rev.1 had been agreed, in order to incorporate the proposals by the expert from Poland (TRANS/WP.29/GRPE/1999/2). Concluding his presentation, he said that the proposal for a draft Regulation on CNG and LPG retrofit systems would be based on documents TRANS/WP.29/GRPE/R.279, informal documents Nos.6/Rev.1 and 8, and confirmed that the relevant prescriptions had been aligned to those of the corresponding EC Directive so that type approvals of LPG and CNG retrofit systems could be granted.

30. The expert from AEGPL supported the proposal with particular regard to having the same safety level for both originally equipped and retrofitted vehicles. She suggested that for prescriptions concerning the installation of LPG and CNG systems a reference to Regulation No. 67 and to the draft Regulation concerning the specific equipment of motor vehicles fuelled by compressed natural gas (CNG) would be better than listing them in the draft proposal.

31. The expert from Greece supported the proposal of informal document No.6/Rev.1 and, after noting that it was in line with the EC Directive, withdrew his proposal to amend paragraph 2.12. of Annex 3A as suggested in his informal document No. 8.

32. The expert from OICA noted with satisfaction that the proposal had been brought in line with the EC Directive but entered a study reservation with particular regard to the parent vehicle definition. The expert from ENGVA shared the concerns on safety expressed by the experts from AEGPL and OICA and appreciated the work done by the authors of the proposal. He expressed the intention to present detailed comments at the next session.

33. GRPE agreed to resume consideration of the proposal of this draft Regulation at its next session. The experts from Italy and AEGPL were asked to produce a revision of document TRANS/WP.29/GRPE/R.279 taking into account the amendments proposed by informal documents Nos.6/Rev.1 and 8 and the suggestion made by AEGPL (see paras. 29 and 30 above).

PERSPECTIVES IN TRANSPORT AND THE ENVIRONMENT

(a) Technical requirements on vehicles after the year 2000

Documentation: Informal documents Nos. 11 and 12 of the annex to this report.

34. The expert from the European Commission informed GRPE that Directive 70/220/EEC (emissions of passenger cars and light duty vehicles) had been amended by Directive 98/69/EC, published in the Official Journal of the EC, No. L 350, of 28 December 1998. He explained the scope, structure and timetable of the Directive and briefed GRPE on the principal changes which it introduced. In particular, he said that new emission limits had been set for the years 2000 and 2005 and that some additional technical requirements had been introduced, including:

- (i) on-board diagnostics (OBD) system for emission control of vehicles of category M1 and N1 with positive-ignition engines and for certain vehicles of category M1 and N1 equipped with compression-ignition engines;
- (ii) revision of the test cycle for tail-pipe emission with suppression of the first 40 seconds of engine idle with no emission sampling;
- (iii) new test at cold temperature (- 7 °C) with limits of 15 g/km for CO and 1.8 g/km for HC;
- (iv) 100,000 km of durability or 5 years (whichever is the sooner) for stage 2005;
- (v) in-use compliance; the manufacturer has to carry out periodic audits of vehicles in service and the authority can check the audit and require confirmatory testing if necessary.
- (vi) possibility for EU Member States to grant incentives for vehicles that meet, in advance, stage 2000 or 2005 emission limits.

He also said that the Commission would, in the framework of the Auto-Oil II programme, make specific proposals by the end of 1999 concerning the extension of the Cold start test and the OBD to vehicles not yet covered by those prescriptions, as well as an improvement of roadworthiness testing, durability testing and fuel quality standards.

35. With regard to fuel quality, the expert from the Commission said that

Directive 98/70/EC had been published in the Official Journal of the EC, No. L350, of 28 December 1998 and that the relevant standards which require, in particular, a reduction of sulphur content for diesel fuel, and of sulphur, benzene and aromatics for petrol, would apply from the year 2000 (first stage) and 2005 (second stage). In addition, leaded petrol will be banned from 1 January 2000, but derogation will be possible until 1 January 2005.

36. The expert from ENGVA expressed the view that prescriptions on OBD should be applicable to alternative fuel vehicles from 2005 instead of 2003 as recently agreed in the EC's Motor Vehicle Emission Group (MVEG).

37. In the response to a question made by the expert from Slovenia and concerning global harmonization, the Chairman of GRPE said that, for the near future (next 3-4 years), ECE emission Regulations are likely to stay in line with the corresponding EU Directives. However, with the entry into force of the Global Agreement, an international forum will be established in the ECE, and this Agreement would represent the working basis to achieve harmonization.

38. The expert from the United States of America shared the opinion of the Chairman and said that, after 30 years of divergent rulemaking activities between Europe and the United States of America, harmonization could not be reached quickly; however, he judged the signature of the Global Agreement to be an important step towards harmonization and expressed the hope that, at least for heavy-duty vehicles, GRPE could establish a harmonized rule. With regard to passenger cars and light duty vehicles he expressed the wish that in the future, within ISO activities, both European and United States test cycles could be compared in order to evaluate their differences and develop a possible common cycle. In this respect, he requested updated information on work carried on by ISO/TC22/SC5/WG1.

39. The expert from ISO committed himself to providing for the next GRPE session, information concerning ISO/TC/22/SC5/WG.1, requested by the expert from the United States of America (see para. 38. above). He also made GRPE aware of the ISO standards concerning CNG road vehicles, which were being studied by the relevant working groups (informal document No. 12).

40. The expert from Japan noted the cooperation of his country in developing a harmonized driving cycle for heavy-duty vehicles and acknowledged difficulties in achieving harmonized prescriptions for light vehicles.

41. The expert from the European Commission fully endorsed the opinion expressed by the other delegates. However, he considered the harmonization of the heavy-duty vehicle driving cycle to be a great opportunity and expressed the will of the Commission to participate in the process of harmonization.

(b) Reduction of carbon dioxide emissions and fuel consumption

Documentation: Informal document No. 1 of the annex to this report.

42. The expert from the EC recalled the information given during previous sessions (TRANS/WP.29/GRPE/36, para. 28.) and said that an average CO₂ emission value of 140 g/km by 2008, representing a 25 per cent CO₂ emission reduction with respect to the 1995 level, had been reached between the EC and ACEA and that a further reduction to 120 g/km should be reached by 2012. He noted the cooperation with Japan to achieve the same target values.

43. He said that the EU Council had agreed on a draft Directive to monitor CO₂ emissions of new cars. In particular, CO₂ emission data will be collected and published by EC on a yearly basis. In order to inform consumers, he said that a fuel economy guide would be published by EC in cooperation with the manufacturers.

44. The expert from the United States of America said that a programme had been set up in order to inform consumers, at the sale points, about fuel consumption. He also added that, due to the price reduction of fuel and the use of large vehicles, fuel consumption had increased and that for new vehicle generations a better energy efficiency should be achieved. In this respect, he mentioned, as an example, the use of hybrid technology.

45. The expert from Japan informed GRPE on the actions taken by his country in order to improve automobile energy consumption efficiency (informal document No. 1). In particular, he said that in Japan carbon dioxide emitted by road vehicles accounted for about 20 per cent of total emissions and that the implementation of measures to reduce those emissions was considered as a priority. In this respect, he noted that fuel efficiency target standard values applicable to certain categories of petrol and diesel-fuelled vehicles had been tabled, and that all the interested parties (government, manufacturers and consumer) would be involved by the energy conservation issue.

EXCHANGE OF INFORMATION ON NATIONAL AND INTERNATIONAL REQUIREMENTS
ON EMISSIONS

Documentation: Informal documents Nos. 2, 7 and 11 of the annex to this report.

46. The expert from the European Commission briefly recalled his informal document No. 11, where information on Directive 98/69/EC, concerning emissions of passenger cars and light duty vehicles (see para. 29.) and the political agreement reached within the Council on the heavy-duty vehicle draft Directive (see paras. 13-16) had been given.

47. The expert from Japan informed GRPE of the latest developments in his country concerning emission reductions (informal document No. 2). He said that diesel vehicle emission standards would be drastically strengthened over two stages (2002 and 2007), with emphasis on the reduction of nitrogen oxides and particulate emissions. He added that the durability running distance would be extended drastically and the OBD installation become mandatory while, for petrol fuelled vehicles, further reductions of evaporative emissions would be considered.

48. The expert from the Russian Federation presented informal document No. 7 and said that, as from 1999, the prescriptions of Regulation No. 49, 02 series of amendments, (stage B) and of Regulation No. 83, 02 series of amendments (stage B and C) would apply in his country, for type-approval purposes.

49. The expert from the United States of America gave an oral presentation of actions taken in his country to reduce emissions. In particular, he said that rigorous standards, similar to those in force in California for LEV vehicles, would apply from 2004 to passenger car emissions, and that Californian standards would have the same level of severity for diesel and petrol engines. He also added that fuel quality would be improved in the future. With regard to heavy-duty vehicles he noted that the United States administration was paying particular attention to in-use emission controls and that legal actions would be taken against manufacturers in the case of proved cycle by-passing cases. He finally informed GRPE of his intention to present an informative document on the above issue at the next GRPE session.

OTHER BUSINESS

(a) Regulation No. 83 (Emissions of M1 and N1 categories of vehicles)

Documentation: TRANS/WP.29/GRPE/1998/14; TRANS/WP.29/1998/32 and Add.1; informal document No. 4 of the annex to this report.

50. The expert from OICA proposed (informal document No. 4) to reinstate as Corrigendum 1 to Supplement 1 to the 03 series of Amendments the following wording which had been agreed for the 01 series of Amendments:

Paragraph 1.1., add at the end:

".....four wheels.

It does not apply to vehicles with an unladen mass of less than 400 kg,

or to vehicles with a design speed not exceeding 50 km/h.

At the request of the manufacturer, type approval according to this Regulation may be extended from M1 or N1 vehicles equipped with compression-ignition engines which have already been type approved, to M2 or N2 vehicles having a reference mass not exceeding 2,840 kg and meeting the conditions of paragraph 7. (extension of approval)."

He said that the proposed amendment was also contained in the text of the corresponding EC Directive 70/220/EEC, so that an alignment to the EC legislation was needed. The proposal by OICA was supported by the expert from France. The secretariat was asked to produce an official proposal to be submitted to WP.29 and AC.1 as soon as possible.

51. The expert from OICA noted that some prescriptions of Annex 4 of Regulation No. 83, as agreed for the 04 series of amendments to the Regulation (TRANS/WP.29/1998/32), were not completely in line with those of the EC Directive 98/69/EC, and asked GRPE to take account of it when drafting the text of the 05 series of amendments. In this respect, the expert from France and the United Kingdom, offered to prepare for the next session of GRPE a proposal to align Regulation No. 83 (in its 05 series of amendments) to EC Directive 70/220/EEC as last amended by EC Directive 98/69/EC.

52. Following a request by the expert from France, the expert from OICA committed himself to investigating whether reference to leaded petrol in Regulation No. 83 would still be necessary after the year 2000 and to inform GRPE as soon as possible.

53. GRPE agreed to resume consideration of the proposals related to Regulation No. 83 at its next session.

(b) Regulation No. 96 (Emissions of agricultural and forestry tractors)

Documentation: TRANS/WP.29/GRPE/1999/4.

54. The expert from the Czech Republic presented his proposal to amend Regulation No. 96, in order to introduce the engine family concept in the communication form (TRANS/WP.29/GRPE/1999/4).

55. GRPE adopted the proposal and asked the secretariat to transmit it to the Working Party and to the Administrative Committee AC.1 for consideration at its twelfth session (June 1999).

(c) Replacement catalytic converters for vehicles with OBD

Documentation: Informal document No. 10 of the annex to this report.

56. The expert from the European Commission confirmed that, in accordance with EC Directive 98/69/EC, which requires manufacturers to produce spare or retrofit parts compatible with the on-board diagnostic system (OBD), both OBD and replacement catalytic converters will be part of the Commission's future work. He expressed the intention to present an informative document at one of the forthcoming meetings.

57. The expert from Poland proposed to amend the prescription of paragraph 5.3. of Regulation No. 103 concerning noise and exhaust back-pressure (informal document No. 10). He suggested that, as an alternative to the measurement of back-pressure, as specified in Regulation No. 59, the verification of the vehicle performance could be made by measuring on a chassis dynamometer at the maximum power, and that the value determined under reference atmospheric conditions with the replacement catalytic converter should not be lower by more than 3 per cent than that determined with the original equipment catalytic converter. He said that this proposal would avoid time-consuming preparation of a vehicle for measurement of the back-pressure and would be useful for those vehicles which do not meet the requirements for the measurement point laid down in Regulation No. 59, Annex 4.

58. GRPE agreed the philosophy of the proposal and asked the secretariat to distribute informal document No. 10 as an official document for consideration at the next session.

(d) Particulate emissions

59. The Chairman of the informal meeting on particulate emissions (see para. 2. above) informed GRPE that, during the meeting, no working papers had been tabled, but a number of presentations and reports on developments in the field of particulate emissions from road vehicles were made. He said that, both in the technical and medical fields, research continued to define the ways in which particles should be measured and regulated and that, at this stage, the information needed to be gathered before making any decisions.

60. The expert from the European Commission outlined recent agreements reached in Brussels on future new vehicle emission standards for both the light and heavy-duty vehicles and also fuel quality standards. Key elements of the standards include: they will both apply in two stages to take effect from 2000 and 2005; the light-duty vehicle standards represent a reduction of about 30 per cent from present levels in 2000 with a further 50 per cent in 2005 (Directive 98/69/EC). The sulphur levels in petrol and diesel fuels will be reduced in 2000 and again in 2005 to a maximum permitted concentration of 50 ppm (Directive 98/70/EC). He said that the Council of Ministers had also agreed to tighter heavy-duty vehicle standards in December 1998 and that limits would be tightened by about 30 per cent from 2000 and a further 30 per cent in 2005, except for particulates for which the standard would be tightened by 80 per cent. This agreement would effectively require particulate traps to be fitted to all diesel-fuelled vehicles. In addition, he said, that a NO_x limit of 2.0 g/kWh would, subject to a review by the Commission, apply from 2008, which is also likely to result in the general use of NO_x after-treatment technology. As regards the measurement procedure for particulates in 2005 he added that the heavy-duty directive included an

article requiring the European Commission to bring forward proposals in 2000.

61. The expert from the United States of America reported on the latest developments in his country (see para. 49.). He said that one key element was a review of the rulemaking to apply to heavy-duty diesel engines from 2004 model year, that would be undertaken in the next 12 months. This review is likely to add a provision for in-use vehicles "not-to-exceed" emission standards that are measured in actual vehicle operation. The primary objective is to ensure that vehicles' in-use emissions are not fundamentally different from those achieved during type approval. He added that, as part of this objective, the EU ESC cycle would also be incorporated into the FMVSS procedure (with modifications) as a means to prevent "cycle-bypass", and also to facilitate in-use testing and comparison with type approval standards. He also reported that the EPA was looking with interest at the 2005 and 2008 EU standards and anticipated that the United States of America might follow with particulate standards of similar severity shortly after the implementation in the EU.

62. The expert from AECC presented a review of after-treatment systems to control particulate emissions (particulate traps). In summary, the presentation showed that trap technology was highly effective in removing particulates (in excess of 90 per cent), including ultra-fine particles which were of increasing medical concern. In response to a number of questions, he indicated that there were over 4,000 devices operating successfully in Europe, most noticeably in Sweden. Most were fitted to large vehicles, but he saw no fundamental problem in applying them to smaller vehicles. He also reported that the catalytic traps (CRT), which comprised the greatest number of traps in use, required low sulphur (max 50 ppm) diesel fuel to maintain the regeneration process, but that sulphur levels below 50 ppm were unnecessary. He was not aware of any concerns with respect to ash deposits. He concluded by saying that significant mileage had been accumulated on a number of vehicles, and that a detailed breakdown of durability data would probably be available for the next meeting.

63. The expert from the United Kingdom reported that a "Particulate Measurement Club" was being established in the United Kingdom aimed at identifying and resolving many of the uncertainties associated with the measurement of numbers and size range of particular emissions. The Club had some 30 members, mainly from industry, but with links to Government and Academia. The key objectives of the Club were to improve the quality of measurement, provide tools for laboratories to develop "best practice" and to facilitate exchange of information on an international basis. He said that work was expected to start in March/April 1999 and would review instrumentation, sampling systems and methods and ways to exchange and disseminate the data.

64. The expert from the United States of America reported that a US\$2 million research project had been approved, looking at the development of particulates in atmospheric processes - from vehicle tail-pipe to the lung. Professor David Kittleson, University of West Virginia, was appointed the lead researcher. He also said that a previous study had already concluded that light duty vehicles were major contributors to particulate matter (PM) in the air and that an additional project was to be proposed for possible funding to look at spark ignition engined vehicles - both old and new. He informed the group that the report on the EPA survey of particle sizing instrumentation was available on the University of Minnesota Web-site (and linked to the EPA web-site) and that EPA was ready to fund the second stage of two transient PM

sizing instrumentation developments.

65. The expert from the European Commission informed the group that the completion of a study initiated by the EC's DG XI was imminent. The main topic of this investigation was the comparison of old and new technology light duty vehicles with regard to size, number and mass of their particulate emissions.

66. The issue of a seminar to provide an opportunity for further exchange of views was discussed, and a decision was taken to postpone consideration of this until results from several research projects, that had just begun, became available. Also, the group agreed to consider the objectives of such a seminar (with particular regard to what is to be communicated and to what target audience) and to look for an existing information exchange body or organization that would meet these objectives. The expert from Italy reiterated his offer to organize the seminar in Naples (TRANS/WP.29/GRPE/36, para. 42.).

67. The agenda of the particulate emission informal meeting was reviewed and it was agreed that this group should emphasize information transfer. The principal topics should, for the time being, be fine PM characterization and particulate control methods. This should also include experience with PM traps in use. The target audience should be the regulators who were expected to make informed regulatory decisions. NO_x control techniques may be addressed in the future.

68. The Chairman of GRPE judged positively the results of the discussion and said that the rulemaking process should be based on an exchange of scientific information. He also added that, when final research results would be available, GRPE would consider possible proposals to regulate this matter. GRPE agreed that the informal discussion of particulate emissions should be resumed during the thirty-eighth session.

(e) Regulation No. 101 (Emission of CO₂ and fuel consumption measurement)

Documentation: Informal document No. 5 of the annex to this report.

69. The expert from OICA presented a proposal to amend the procedure to be followed in order to ensure the conformity of production with regard to electric energy consumption (informal document No. 5). He proposed to adopt similar provisions as for internal combustion engines (paragraph 9.3.1.2. of Regulation No. 101), in order to make it possible, at the request of manufacturers, to carry out tests on vehicles which had not been run-in.

70. GRPE adopted the proposal and asked the secretariat to produce an official document to be submitted to the Working Party and to the Administrative Committee AC.1 for consideration at its twelfth session (June 1999).

Tribute to Mr. Hager

71. Mr. C. Hager, Head of Vehicle Engineering Directorate of the Greek Ministry of Transport and Communications informed the delegates that, after more than four years, he would cease to attend GRPE and WP.29 meetings, and that he would be responsible for telecommunication matters inside his administration. He recalled the years of collaboration and friendship and announced that, Mr. P. Liberopoulos, of the same administration, would be his successor.

72. The Chairman, speaking on behalf of GRPE, thanked Mr. Hager for his active participation in WP.29 and GRPE activities and praised his technical expertise. In particular, he recalled his participation in the discussion that had preceded the adoption of EURO 3 and EURO 4 emission Regulations as well as in the revision of the 1958 Agreement and of the Global Agreement. All delegates wished Mr. Hager the very best for his new area of responsibility and welcomed his successor.

AGENDA FOR THE NEXT SESSION

73. For the thirty-eighth session, planned to be held at Geneva from Tuesday 25 May (14.30 h) to Friday 28 May (12.30 h) 1999, GRPE agreed to continue with the scheme of two separate informal meetings incorporated in the agenda and provided with interpretation services:

(a) Informal meeting on particulate emissions

To be held at Geneva, on Tuesday 25 May 1999 (14.30 h to 17.30 h), with the discussion focusing on:

1. The exchange of information in the field of particulate matter emissions
2. Preparation of the seminar (see para. 66. above).

(b) Informal meeting of the working group
on the world-wide heavy-duty certification procedure (WHDC)

To be held at Geneva, on Wednesday 26 May 1999 (9.30 h to 17.30 h). The agenda of the session will be prepared and distributed to the WHDC members prior to the meeting.

(c) Thirty-seventh session of GRPE proper

To be held at Geneva, from Thursday 27 May (9.30 h) to Friday 28 May (12.30 h) 1999. 2/ The following agenda was agreed:

1. Regulation No. 49 (Emissions of C.I., N.G., and P.I.(LPG) engines)
 - 1.1. Development of the emission testing procedure
 - 1.2. Alignment of Regulation No. 49 to the corresponding draft EC Directive.
2. ECE Regulations concerning the LPG- and NG-fuelled vehicles/engines
 - 2.1. Draft Regulation concerning the specific equipment of motor vehicles fuelled by compressed natural gas (CNG)
 - 2.2. Proposal for a draft Regulation concerning retrofit systems for LPG and CNG
3. Perspectives in transport and the environment
 - 3.1. Technical requirements on vehicles after the year 2000.
 - 3.2. Reduction of carbon dioxide emissions and fuel consumption.
4. Exchange of information on national and international requirements on emissions 3/
5. Proposal for draft amendments (05 series of amendments) to Regulation No. 83 (Emissions of M1 and N1 categories of vehicles).

2/ As part of the secretariat's efforts to reduce expenditure, all the official documents distributed prior to the session by mail will not be available in the conference room for distribution to session participants. Delegates are kindly requested to bring their copies of documents to the meeting.

3/ Delegations are invited to submit brief statements on the latest status in national requirements and, if necessary, to supplement this information orally.

6. Other business
 - 6.1 Replacement catalytic converters for vehicles with OBD
 - 6.2. Particulate emissions

6.3. Evolution of fuel quality

Annex

LIST OF INFORMAL DOCUMENTS DISTRIBUTED WITHOUT A SYMBOL DURING THE SESSION

No.	Transmitted by	Agenda item	Language	Title
1.	Japan	3.2.	E	Strengthening of Standards for Automobile Fuel Efficiency - Reinforcement of Standards for Determinations by Manufacturers, etc. Regarding Improvements in Automobile Energy Consumption Efficiency (Interim Report)
2.	Japan	4.	E	Future Policy for Motor Vehicle Exhaust Emission Reduction - (Third Report) - By the Central Environment Council
3.	OICA	2.2.	E	Draft ECE Regulation on Equipment for NG Fuelled Engines and their Installation
4.	OICA	5.1.	E/F	ECE Regulation No. 83, Revision 1 - Amendment 3
5.	OICA	5.5.	E/F	ECE Regulation No. 101 - Amendment 1 Measures to ensure the conformity of production with regard to electric energy consumption
6.	Italy Netherlands	2.3.	E	Proposal for draft amendments to the draft Regulation on LPG and CNG retrofit systems (documents TRANS/WP.29/GRPE/R.279, TRANS/WP.29/GRPE/1998/12 and TRANS/WP.29/GRPE/1999/3)
6. Rev.1	Italy Netherlands Poland	2.3.	E	Proposal for draft amendments to the draft Regulation on LPG and CNG retrofit systems (document TRANS/WP.29/GRPE/R.279)
7.	Russian Federation	4.	E	Requirements on Emissions and Noise in the Russian Federation
8.	Greece	2.3.	E	Proposal for Draft Amendments to the Draft Regulation on LPG and CNG Retrofit Systems (TRANS/WP.29/GRPE/R.279)
9.	Netherlands	2.2.	E	Draft Proposal for Amendments to Documents TRANS/WP.29/1998/33, TRANS/WP.29/1998/64, TRANS/WP.29/1998/68

No.	Transmitted by	Agenda item	Language	Title
10.	Poland	5.3.	E	Proposal for Draft Amendment to Regulation

No. 103

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| 11. | European
Commission | 1.2.,
1.3.,
3.1.,
4. | E | Future European Community Emission
Requirements |
| 12. | ISO | 3.1. | E | CNG Road Vehicles : Related ISO Standards |
| -- | Secretariat | 5.4. | E | First International Conference on Health
Effects of Vehicle Emissions - London,
16 and 17 February 1999 |
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