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Working Party on the Construction of Vehicles

Meeting of Experts on Pollution and Energy

REPORT OF THE MEETING OF EXPERTS ON POLLUTION AND ENERGY
ON ITS THIRTY-FIFTH SESSION
(13 - 16 January 1998)

ATTENDANCE

1. The Meeting of Experts on Pollution and Energy held its thirty-fifth session from 13 January (afternoon) to 15 January (afternoon) 1998 only ^{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; 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); The European Association of Internal Combustion Engine Manufacturers (EUROMOT); Automobile Emissions Control by Catalysts (CEFIC/AECC); The Oil Companies' European Organization for Environment, Health and Safety (CONCAWE); European LPG Association (AEGPL); European Natural Gas Vehicle Association (ENGVA).

^{1/} In addition, two special informal meetings were held, on 13 January (morning) and 16 January (morning) 1998 - see paras. 2 and 3 of the report.

2. Prior to the WP.29/GRPE session proper, on 13 January 1998, morning only, an informal meeting of the GRPE working group on the world-wide heavy-duty certification procedure (WHDC - former "Brainstorming group" (BSG), see TRANS/WP.29/GRPE/34, paras. 2 and 9) was held under the chairmanship of Mr. C. Havenith (Netherlands), to consider fundamental elements of its work programme and of the work programme of its three ISO subgroups. Experts from the following countries and organizations participated in the work: Czech Republic; Germany; Hungary; Japan; Netherlands; Slovenia; Sweden; Switzerland; United Kingdom; United States of America; European Commission (EC); International Organization for Standardization (ISO); International Organization of Motor Vehicle Manufacturers (OICA). A report on the results of this informal meeting is summarized below (see paras. 5 to 12).

3. After the WP.29/GRPE session proper, on 15 January (evening) and 16 January (morning only) 1998, an informal meeting was held, chaired by Mr. M. Dunne (United Kingdom) and devoted to consideration of the particulate emissions of the currently regulated range ($\leq 10 \mu\text{m}$) and smaller ($\leq 2.5 \mu\text{m}$) and their influence on human health. Experts from the following countries and organizations participated in the work: Czech Republic; Denmark; Germany; Hungary; Italy; Japan; Netherlands; Norway; Poland; Russian Federation; Sweden; Switzerland; United Kingdom; United States of America; European Commission (EC); International Organization for Standardization (ISO); International Organization of Motor Vehicle Manufacturers (OICA); Liaison Committee for the Manufacture of Automobile Equipment and Parts (CLEPA); The European Association of Internal Combustion Engine Manufacturers (EUROMOT); The Oil Companies' European Organization for Environment, Health and Safety (CONCAWE); European Natural Gas Vehicle Association (ENGVA). A report on the results of this informal meeting is summarized below (see paras. 49 to 51).

4. The documents without a symbol distributed during the session are listed in annex 1 to this report.

REGULATION No. 49 (Emissions of compression-ignition engines)

(a) Development of the emission testing procedure

Documentation: TRANS/WP.29/GRPE/1998/1.

5. The Chairman of the WHDC group summarized the results of the third meeting 2/, which had been held prior to the WP.29/GRPE session (see para. 2 above). He said that two approaches to the constitution of a representative transient test cycle had been presented, one by the Netherlands (TNO) and another by the United Kingdom. He explained that the TNO approach was based on a statistical analysis of a very large sample of statistical data, whilst the United Kingdom proposed to generate random transient test cycles. He stated that, in principle, these approaches were not exclusive. He also informed WP.29/GRPE that, based on the above, the TNO (Netherlands) and FIGE (Germany) research institutes should, within six weeks, present jointly a proposal regarding fundamental work on the heavy-duty emission test cycle development.

2/ Second meeting of the WHDC group had been held in Brussels, on 23 Sept. 1997.

6. He also reported that the WHDC group agreed to assign special technical tasks to three ISO sub-groups, in order to speed up the development work:

ISO/TC 22/SC 5/WG 2 - Exhaust emissions measurement

ISO/TC 22/SC 5/WG 7 - Smoke test procedure

ISO/TC 22/SC 5/WG 9 - Engine family.

He indicated that the work plans and composition of the working groups had been clear for WG 2 and WG 9. However, the situation and plans remained to be clarified for WG 7.

7. The Chairman of the WHDC group also reviewed the first assessment of the financial requirements for the development work contemplated. He said that Germany and the Netherlands had already reserved corresponding budgets and that OICA had been prepared to share some fifty per cent of the total cost, preliminarily estimated at US \$ 200 thousand.

8. The expert from the European Commission confirmed the support for the development of a world-wide harmonized emission test cycle for heavy-duty engines, to be introduced in 2005. He said, that if this was not possible, a further stage of emission limits reduction (EURO 4) would be based on the combined cycles of EURO 3 (see also informal document No. 6, section 5.3.).

9. The intentions to cooperate with the WHDC group were also confirmed by the expert from Japan.

10. The expert from the United States of America said that, in the work planned by the WHDC, two main objectives had been identified, achieving of the air quality benefits, and the potential for the heavy-duty emission test cycle harmonization in which, however, he understood that the United States of America had been assigned a role of an observer. He said that, in his view, for the programme, of the extent planned by the WHDC, the objectives needed to be better addressed and that until then the United States of America would be unable to expand its cooperation beyond the observer's role. For the technical level of cooperation he agreed to bring to the attention of his Government the work plans of the three ISO sub-groups (see para. 6 above), in order to assess the level of his country's participation in their work.

11. Considering the technical problems of the existing heavy-duty transient emission test cycles, the expert from the Engine Manufacturers Association, participating in the delegation of the United States of America, said that effective work was in progress in order to resolve soon the issue of defeat devices, known to be used for cycle beating or by-passing. Regarding the work of the WHDC group, he declined to participate for the time being.

12. The Meeting of Experts appreciated the work by the WHDC and encouraged the group to continue its efforts towards a harmonized heavy-duty emission test cycle, assuring the necessary international cooperation.

13. Consideration of the proposal for future fuel qualities (TRANS/WP.29/GRPE/1998/1) was deferred to a later time, in order to keep the alignment with the proposal for EURO 3 level (TRANS/WP.29/GRPE/34, para. 8).

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

Documentation: TRANS/WP.29/GRPE/R.277; informal documents Nos. 1A, 1B and 6 of annex 1 to this report.

14. Considering the proposal by France (TRANS/WP.29/GRPE/R.277), the expert from ENGVA supported the request to limit for the gas-fuelled engines the non-methane hydrocarbon emissions (NMHC) and not to measure the particulate emissions and smoke. He stated that, whilst the gas engines have inherently low NO_x emissions and virtually no particulate and smoke emissions, meeting of the total HC emissions (THC), prescribed for diesel-fuelled engines, would present serious difficulties.

15. The expert from the EC confirmed that, based on the results of the Auto-Oil Programme, the question of the emission limits and the reference fuels for gas engines was under consideration in the European Community as a part of the amendments proposed to Directive 88/77/EEC (informal document No. 6). He said that the proposal was expected to be completed by the end of 1998 and that it was expected that similar considerations should later be utilized also for light vehicles (amendments to Directive 70/220/EEC).

16. In view of the above information, the Meeting of Experts agreed to postpone further consideration of the question of emission limits and reference fuels for gas-fuelled engines until the outcome of the current discussions in the EC was known, most probably to the thirty-seventh session (January 1999).

17. Informal documents Nos. 1A and 1B, tabled by the expert from the Netherlands, were considered and adopted by the Meeting of Experts. It was agreed to transmit the adopted documents to the Working Party and to the Administrative Committee AC.1 for consideration at its ninth session (June 1998), as:

- (a) Draft Corrigendum 2 to Supplement 1 to the 02 series of amendments to Regulation No. 49 (see annex 2 to this report), and
- (b) Draft Corrigendum 1 to Supplement 2 to the 02 series of amendments to Regulation No. 49 (see annex 3 to this report).

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

Documentation: TRANS/WP.29/GRPE/1998/6.

18. The proposal for the draft 04 series of amendments, aligning Regulation No. 83 with Directives 96/44/EC and 96/69/ECE, was considered and adopted by the Meeting of Experts with the corrigenda noted below. In addition, the expert from the United Kingdom agreed to check for any other errors in the text of the document. The WP.29/GRPE agreed to transmit the adopted document to the Working Party and to the Administrative Committee AC.1 for consideration at its ninth session (June 1998).

Paragraphs 5.3.1.4.2.1. and 5.3.1.4.3.1., the tables, for N1 category of vehicle correct the words "Category I - Category II - Category III" to read "Class I - Class II - Class III".

Annex 4 - Appendix 8,

Paragraph 1.5.2.1., the second equation 3/, and (in English only) the value of k_H , correct to read:

$$H = \frac{6.211 \cdot 60 \cdot 3.2}{101.33 - (2.81 \cdot 0.6)}$$

$$k_H = 0.9934$$

Paragraph 1.5.2.3., the last equation correct to read (English only):

$$M_{NO_x} = \frac{7.41}{d} \quad \text{g/km}$$

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/GRPE/1998/2;
TRANS/WP.29/GRPE/1998/3; TRANS/WP.29/GRPE/1998/5; informal documents Nos. 11,
12, 14 and 16 of annex 1 to this report.

19. Document TRANS/WP.29/GRPE/1998/2, prepared by the expert from the Netherlands, was considered and adopted without amendments, as a corrigenda to document TRANS/WP.29/R.808.

20. Document TRANS/WP.29/GRPE/1998/3, tabled by France, was considered and superseded by informal document No. 16, which aligned the proposed provisions for mounting of the fuel container in the vehicle with those of the draft Regulation concerning specific equipment of motor vehicles fuelled by CNG (document TRANS/WP.29/GRPE/R.269, as amended by TRANS/WP.29/GRPE/1998/8, para. 17.4.3.2. modified). The adopted text of informal document No. 16 is incorporated in annex 4 to this report.

21. Considering the main item of concern of document TRANS/WP.29/R.808, the Meeting of Experts recalled the proposal by France (TRANS/WP.29/GRPE/34, para. 24), which had been corrected during the one-hundred-and-thirteenth session of WP.29 (TRANS/WP.29/599, para. 41). After a detailed consideration of the safety aspects, alternative (b) was adopted, i.e. 80 per cent filling of the tank, relief valve set to 27 ± 1 bar, and no necessity to protect the tank by a sun shield.

22. The expert from Italy reported on the fire test which had been made in his country and from which it had been concluded that, in addition to the above-mentioned pressure relief valve, a second relief valve, temperature-

3/ Corrected in line with Directive 96/44/EC of 1 July 1996.

triggered at 110 ± 10 °C was needed to protect the tank from explosion in case of a fire (informal document No. 14).

23. The proposal by Italy was discussed and the safety concerns were in principle recognized. To allow for verification of this additional safety device by other parties concerned, the WP.29/GRPE agreed to incorporate the device proposed in informal document No. 14 into the set of additional draft amendments (annex 4 to this report) to the proposal for draft Supplement 2 to Regulation No. 67 (TRANS/WP.29/R.808), marked, however, by square brackets, to indicate the need for attention to this proposal by WP.29.

24. Also adopted by the Meeting of Experts were the corrigenda signalled by the expert from Greece (informal document No. 11) which are incorporated in annex 4 to this report, together with some complementary amendments (to annexes 15, 16 and 17) transmitted to the secretariat by the expert from Greece after the session.

25. Examined and adopted was also informal document No. 12, tabled by the expert from the Netherlands and the amendments/corrigenda contained in that document are incorporated in annex 4 to this report; where relevant, an account was taken of the proposals of document TRANS/WP.29/GRPE/1998/5. Note by the secretariat: Also included in annex 4 are editorial corrections discovered by the translators.

26. The Meeting of Experts decided to transmit the amended document TRANS/WP.29/R.808 to the Working Party and to the Administrative Committee AC.1 for consideration at its ninth session (June 1998). For this purpose the secretariat was requested to prepare a consolidation of the adopted amendments, based on documents TRANS/WP.29/GRPE/1998/2 and annex 4 to this report (see paras. 19, 20 and 23 to 25 above). With respect to the complex nature of the proposal and of the additional amendments/corrigenda, the Meeting of Experts decided to examine the document containing the consolidated amendments during the thirty-sixth session, prior to its transmission to WP.29 and AC.1.

(b) Reference fuels

Documentation: TRANS/WP.29/GRPE/R.275/Rev.1; informal document no. 10 of annex 1 to this report.

27. Recalling the information given during the last session (TRANS/WP.29/GRPE/34, para. 11), the expert from the European Commission confirmed that the range of NG reference fuels had been considered to be extended by a higher energy content fuel for environmental friendly vehicles, but that for ordinary vehicles fuels G20, G23 and G25 remained to be representative. However, to give more precise quality specifications, it had been proposed to define the reference fuels not by the calculated Wobbe Index, but by setting tolerances to the contents of CH₄ and N₂. He proposed that the same approach should be adopted for the proposal given in document TRANS/WP.29/GRPE/R.275/Rev.1. The information was noted, and WP.29/GRPE agreed to wait for the final proposal by the European Commission. It was stressed that, for real operation emission assessment, it was important that the reference fuels represent the fuels commercially available.

28. Referring to the same document, the expert from the Netherlands suggested a modification of the LPG reference fuel A. He explained the reasons for his proposal and agreed to prepare a corresponding working paper for consideration at the next session.

29. The expert from Germany presented informal document No. 10, suggesting amendments to document TRANS/WP.29/GRPE/R.275/Rev.1 (Proposal for draft amendments to Regulation No. 49). A part of his proposal was a structure of a test guide, intended to assist the laboratories in performing the approval tests. There were positive views on this proposal and the expert from Germany agreed to complete informal document No. 10 and transmit it to the secretariat in order to distribute it as an official working document for consideration at the thirty-sixth session of WP.29/GRPE.

PROPOSAL FOR A DRAFT REGULATION CONCERNING RETROFIT SYSTEMS FOR LPG AND CNG

Documentation: TRANS/WP.29/GRPE/R.279; TRANS/WP.29/GRPE/1998/4; TRANS/WP.29/GRPE/1998/7; TRANS/WP.29/GRPE/1998/10; informal documents Nos. 7, 15 and 17 of annex 1 to this report.

30. The expert from Italy explained that the proposal for the new draft Regulation (TRANS/WP.29/GRPE/R.279) should be considered as amended by document TRANS/WP.29/GRPE/1998/7. He agreed that additional amendments were necessary, based on decisions taken during the session with respect to Regulation No. 67 and the new draft Regulation concerning the specific equipment of motor vehicles fuelled by CNG.

31. During the discussion a number of specific comments were made by the expert from Poland. He pointed out items requiring further clarifications, particularly with respect to the limitation of use of the approved specific equipment to the family concerned, and to testing provisions.

32. The proposal by Hungary was also considered (TRANS/WP.29/GRPE/1998/4) and the Meeting of Experts agreed that its amendments and comments should be taken into account, where applicable.

33. Considering the proposal by AEGPL (TRANS/WP.29/GRPE/1998/10), the Meeting of Experts found it unnecessary to introduce into an international Regulation provisions applicable to local type approvals. Noting the explanation, given by the expert from AEGPL, that same local quality fuels may be available in different countries, the WP.29/GRPE invited her to re-examine the proposal and to make the "local type approvals" internationally applicable.

34. The proposals and comments made during the session were addressed by the expert from Italy in informal document No. 17, in which he also incorporated informal document No. 7 of Greece and informal document No. 15 of OICA.

35. After a first examination and some minor corrections to informal document No. 17, the Meeting of Experts adopted in principle document TRANS/WP.29/GRPE/R.279, as amended by TRANS/WP.29/GRPE/1998/7 and by informal document No. 17. It also decided to resume the consideration of the proposal

at its next session and requested the secretariat to distribute for this purpose informal document No. 17 with an official symbol.

PROPOSAL FOR A DRAFT REGULATION CONCERNING THE SPECIFIC EQUIPMENT OF MOTOR VEHICLES FUELLED BY COMPRESSED NATURAL GAS (CNG)

Documentation: TRANS/WP.29/GRPE/R.269; TRANS/WP.29/GRPE/1998/8; informal documents Nos. 7 and 9 of annex 1 to this report.

36. The expert from Italy introduced document TRANS/WP.29/GRPE/1998/8, and informed WP.29/GRPE that it contained amendments prepared on the basis of comments on the proposal for the draft Regulation (TRANS/WP.29/GRPE/R.269) which had been made during the thirty-fourth session.

37. During the consideration which followed, additional amendments were agreed to document TRANS/WP.29/GRPE/1998/8 and are reproduced in annex 5 to this report. These include the amendments/corrigenda prepared by the expert from Greece (informal document No. 7).

38. The expert from ENGVA drew the attention of the Meeting of Experts to several sections of the proposal not fully aligned with corresponding ISO provisions and recommended to postpone the final adoption of the proposal to the next session for which these differences could be eliminated. Contrary to his opinion, the experts from Italy and France, supported by the expert from OICA, stated their preference for an immediate adoption of the proposal, allowing for its earlier implementation.

39. The Meeting of Experts considered both opinions and decided to adopt the proposed draft Regulation (TRANS/WP.29/GRPE/R.269), as amended by document TRANS/WP.29/GRPE/1998/8 and annex 5 to this report (see para 37. above); it was also agreed to transmit the amended proposal to the Working Party and to the Administrative Committee AC.1 for consideration at its ninth session (June 1998). At the same time the recognition was confirmed of the previous work by ISO and the WP.29/GRPE agreed that the future objective should be to eliminate differences between the draft Regulation and the relevant ISO provisions.

40. Recalling the consideration during the previous session of the provisions for high-pressure containers for CNG, the expert from ISO introduced informal document No. 9, giving the status report on draft ISO 11439 - High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles and estimating that if the final vote was positive, the draft might be published as a final ISO Standard in early 1999.

PERSPECTIVES IN TRANSPORT AND THE ENVIRONMENT

(a) Technical requirements on vehicles after the year 2000

Documentation: Informal document No. 18 of annex 1 to this report.

41. The expert from the EC presented informal document No. 18, reviewing the status of work in the Auto-Oil Programme II, which had been set to provide the

technical input for future vehicle emission limits and fuel requirements. The information was noted and the WP.29/GRPE agreed to follow the development closely.

(b) Reduction of carbon dioxide emissions and fuel consumption

Documentation: Informal document No. 8 of annex 1 to this report.

42. The expert from the EC confirmed that the three-fold approach which had been presented during the previous session (TRANS/WP.29/GRPE/34, para. 20) was still followed. Regarding the consideration of possible voluntary agreements with the industry, he mentioned the CO₂ emission values of 155 g/km suggested by the industry (ACEA) and 120 g/km considered by the Council of Ministers, in both cases to be reached on average by the year 2005, and a significantly more ambitious target of the European Parliament, to reduce the CO₂ specific emission to 90 g/km as a limit to be achieved in 2010.

43. With respect to the legislative approach (monitoring, fiscal measures, etc.), he said that a draft proposal for monitoring of CO₂ emissions had been prepared and should proceed to further considerations. The easiest of the three approaches was in his view the labelling which should start to be implemented in 1998.

44. The expert from the United States of America presented the program of Partnership for a New Generation of Vehicles and the Environment (PNGV), which had been launched in 1993 as a 10-year joint research and development effort between the US Government and industry to develop new automotive technology which should help to reduce CO₂ emissions and fuel consumption of vehicles in the United States of America (informal document No. 8). He pointed out examples of technology involved and summarized in this informal document.

RESULTS OF THE 1997 REGIONAL CONFERENCE ON TRANSPORT AND THE ENVIRONMENT

Documentation: ECE/RCTE/CONF./4; ECE/RCTE/CONF./5/FINAL; ECE/RCTE/CONF./6 and Corr.1; informal document No. 4 of annex 1 to this report.

45. The secretariat reported on the results of the Conference, which had been attended by representatives of 40 countries, including forty-five Ministers or Secretaries of State responsible for Transport or the Environment (informal document No. 4). Besides a Declaration, a Programme of Joint Action (and a Protocol on Combined Transport on Inland Waterways), an Agreement on Periodical Technical Inspections of Wheeled Vehicles (ECE/RCTE/CONF./4) had been signed by 22 countries (mostly subject to ratification) and its draft addendum 1 had been endorsed (ECE/RCTE/CONF./5/FINAL), which should regulate the periodical inspections of commercial and large passenger vehicles used in international transport. Such periodical technical inspections should in the future be required by the amendments (ECE/RCTE/CONF./6 and Corr.1) proposed to the 1971 European Agreement supplementing the 1968 Convention on Road Traffic. The secretariat confirmed that, after its entry into force, the new Agreement should be administered by WP.29. The Meeting of Experts was also informed that the amendments to the 1971 European Agreement needed editorial corrections in its French version and after their completion should be

transmitted by the Government of Austria to the Secretary-General of the United Nations for legal processing prescribed by the Agreement.

EXCHANGE OF INFORMATION ON NATIONAL AND INTERNATIONAL REQUIREMENTS
ON EMISSIONS

Documentation: Informal documents Nos. 2, 3, 5 and 13 of annex 1 to this report.

46. The following information was given:

European Union (EU) countries: Detailed information is reproduced in annex 6 to this report. The Meeting of Experts was also informed that the European Community Directive on emissions of non-road engines (aligned with Regulation No. 96) had finally been adopted and should soon be published; some delays had been allowed for the application dates:
for $P \geq 130$ kW from 1.1.1998; for $75 \leq P < 130$ kW from [1.4.1999],
and for $37 \leq P < 75$ kW from 1.1.2001.

Denmark: Details of the tax incentives presented during the thirty-fourth session were distributed (informal document No. 3).

Japan: The Summary of the second report by the Central Environment Council "Future policy for motor vehicle exhaust emission reduction (November 21, 1997) was presented (informal document No. 2).

Romania: Present and future requirements for the first registration of vehicles, Regulation No. 83, 03 series of amendments, and Regulation No. 49, 02 series of amendments were made available (informal document No. 5).

United States of America: Presentation of the Global Mobile Source Particulate Characterization World Wide Web (PC-WWW) Information Exchange Program (informal document No. 13).

OTHER BUSINESS

(a) Replacement catalytic converters for vehicles with OBD

47. The expert from CLEPA recalled that from 1 January 2000 the on-board diagnostics systems would be required for new types of petrol-fuelled vehicles in Europe (see annex 6 to this report). He said that for such vehicles the replacement catalytic converters would need to be very much like the original converters and that work was in progress to address that situation by amending Regulation No. 103. He also noted that in the European Community a Directive equivalent to Regulation No. 103 had not yet been prepared.

Note by the secretariat: The European Community deposited its instrument of accession to the 1958 Agreement on 23 January 1998 and will be a Contracting Party to the Agreement as from [24 March 1998]. Regulation No. 103 is one of the 77 ECE Regulations which will be applied as alternatives to the technical annexes to the relevant separate EC Directives. Of the listed ECE Regulations, for which at the date of accession no corresponding separate

EC Directives exist, they shall become alternatives at the moment where these separate Directives will become applicable.

(b) Wishes for a speedy recovery to Mr. M.L. Halberstadt

48. Learning that Mr. Halberstadt, Director of the Vehicle Environmental Department of the American Automobile Manufacturers Association (AAMA), and a long-time active member of the delegation of the United States of America to WP.29/GRPE, had undergone a heart operation, the Meeting of Experts wished him a quick and complete recovery.

INFORMAL MEETING ON PARTICULATE EMISSIONS

49. The informal meeting held after the WP.29/GRPE session proper (see para. 3. above), heard a report from its Chairman summarizing previous research on particulate measurements in the United Kingdom and of a seminar held in London on 24 October 1997, where other research had been presented. This seminar had highlighted the need for closer cooperation in this field of research and the Internet had been identified as one solution to wider dissemination of information. The Chairman explained that the United Kingdom was keen to progress with research but wanted to explore the ways for coordination and collaboration.

50. Presentations were given by Dr. Kittleson from the United States of America and from Dr. Meyer from Switzerland, both highlighting their research into atmospheric particulates and of emission from vehicles working underground.

51. During the discussion it became clear that various research projects and investigations are continuing and that the best way forward for collaboration would be to develop the use of Internet as a first stage. Nevertheless, there was general agreement that regular meetings, possibly attached to WP.29/GRPE, could prove a useful method of taking the issues forward collectively. The United Kingdom agreed to prepare a summary paper setting out the main issues for further discussion at the next informal meeting, for which the programme should be prepared (see para. 52(a) below).

AGENDA FOR THE NEXT SESSION

52. For the thirty-sixth session, planned to be held at Geneva from Tuesday 2 June (14.30 h) to Friday 5 June (12.30 h) 1998, the Meeting of Experts agreed that two separate informal meetings should be incorporated and provided the translation services:

(a) Informal meeting on particulate emissions

To be held at Geneva, on Tuesday 2 June (from 14.30 h) and Wednesday 3 June (to 12.30 h) 1998. The discussion and presentations should include the following aspect of the particulate matter emissions:

1. Health effects
2. Atmospheric effects
3. Sampling and analysis techniques

4. Engine and fuel technology influences
5. Post exhaust valve control techniques

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

To be held at Geneva, on Wednesday 3 June 1998 (14.30 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-sixth session of the WP.29/GRPE proper

To be held at Geneva, from Thursday 4 June (9.30 h) to Friday 5 June (12.30 h) 1998. 4/ The following agenda was agreed:

1. Regulation No. 49 (Emissions of compression-ignition engines)
 - 1.1. Development of the emission testing procedure
 - 1.2. Approval of vehicles equipped with LPG- and NG-fuelled engines
2. Amendments to ECE Regulations with respect to LPG- and NG-fuelled vehicles/engines
 - 2.1. Regulation No. 67 (Equipment for liquefied petroleum gas)
 - 2.2. Reference fuels
3. Proposal for a draft Regulation concerning retrofit systems for LPG and CNG
4. Perspectives in transport and the environment
 - 4.1. Technical requirements on vehicles after the year 2000
 - 4.2. Reduction of carbon dioxide emissions and fuel consumption.
5. Exchange of information on national and international requirements on emissions 5/
6. Other business
 - 6.1. Regulation No. 83 (Emissions of M₁ and N₁ categories of vehicles)
 - 6.2. Proposal for a draft Regulation concerning the specific equipment of motor vehicles fuelled by compressed natural gas (CNG)
 - 6.3. Replacement catalytic converters for vehicles with OBD

4/ 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.

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

Annex 1

LIST OF INFORMAL DOCUMENTS DISTRIBUTED WITHOUT A SYMBOL DURING THE SESSION

No.	Transmitted by	Agenda item	Language	Title
1A.	Netherlands	1.2.	E	Proposal for draft Corrigendum 2 to Supplement 1 to the 02 series of amendments to Regulation No. 49
1B.	Netherlands	1.2.	E	Proposal for draft Corrigendum 1 to Supplement 2 to the 02 series of amendments to Regulation No. 49
2.	Japan	8.	E	Summary of "Future Policy for Motor Vehicle Exhaust Emission Reduction (November 21, 1997)" (Second Report), Report by the Central Environment Council
3.	Denmark	8.	E	Recent development in taxation of vehicles and fuels in Denmark
4.	Secretariat	7.	E	Conference on Transport and the Environment (Vienna, 12-14 November 1997); Outcome and the follow-up
5.	Romania	8.	F	Règlement Roumain concernant les émissions des véhicules à la première immatriculation
6.	European Commission	1.3.	E/F	Proposal for a Directive of the European Parliament and the Council amending Directive 88/77/EEC of 3 December 1987 on the approximation of laws of the Member States relating to the measures to be taken against the emission of gaseous and particulate pollutants from diesel engines for use in vehicles
7.	Greece	4., 5.	E	Remarks on documents TRANS/WP.29/GRPE/1998/7 and 8
8.	United States of America	8.	E	Programs for the reduction of carbon dioxide emissions and fuel consumption in the United States
9.	ISO	5.	E	Status report on draft ISO 11439: High pressure cylinders for the on-board storage of natural gas as a fuel for automotive vehicles (by the Chairman of ISO TC58/SC3)

No.	Transmitted by	Agenda item	Language	Title
10.	Germany	3.2.	E	Comments on TRANS/WP.29/GRPE/R.275/Rev.1
11.	Greece	3.1.	E	Supplement to document No. TRANS/WP.29/GRPE/1998/2
12.	Netherlands	3.1.	E	Proposal for draft amendments to Supplement 2 to Regulation No. 67 (document TRANS/WP.29/R.808)
13.	United States of America	8.	E	Global Mobile Source Particulate Characterization World Wide Web (PC-WWW) Information Exchange Program
14.	Italy	3.1.	E	Proposal for draft amendments to document TRANS/WP.29/R.808
15.	OICA	4.	E	Proposed amendments to the draft Regulation on LPG/NG retrofit systems (Document TRANS/WP.29/GRPE/R.279)
16.	France	3.1.	E	Proposal for draft amendments to the proposal for draft Supplement 2 to Regulation No. 67
17.	Italy	4.	E	Italian proposal on amendments to document TRANS/WP.29/GRPE/R.279 and TRANS/WP.29/GRPE/1998/7 on retrofit CNG and LPG systems
18.	European Commission	6.1	E	Status of work in the Auto/Oil Programme 2

Annex 2

DRAFT CORRIGENDUM 2 TO SUPPLEMENT 1 TO THE 02 SERIES OF AMENDMENTS
TO REGULATION No. 49, ADOPTED BY THE MEETING OF EXPERTS
(Emissions of C.I., N.G. and P.I. (LPG) engines)

Annex 4, paragraph 2.2.2., amend to read:

"2.2.2. Spark ignition engines

$$F = \left(\frac{99}{p_s} \right)^{0.65} \times \left(\frac{T}{298} \right)^{0.6} \quad "$$

Annex 4 - Appendix 1,

Paragraph 2.2., amend to read:

"... For determination of exhaust flow either of the following methods may be used. The volumetric flow rates V'_{EXH} and V''_{EXH} are defined at $T = 273 \text{ K}$ and $p = 101.315 \text{ kPa}$."

Annex 4 - Appendix 3,

Paragraph 1.1.2.1.2., amend to read:

"1.1.2.1.2. In the case of N.G. engine:

$$\text{ppm (wet basis)} = \text{ppm (dry basis)} \times (1 - 3.15 G_{FUEL}/G_{AIR})$$

where:

G_{FUEL} is the fuel flow (kg/s) (kg/h)

G_{AIR} is the air flow (kg/s) (kg/h)."

Paragraph 1.1.3.2., amend to read:

"1.1.3.2. N.G. and LPG engines NOx correction factor:

The values of the oxides of nitrogen shall be multiplied by the following humidity correction factor (KNOx):

$$KNOx = 0.6272 + 0.04403 H - 0.0008625 H^2$$

where:

H = humidity of the inlet air in g of H₂O per kg dry air
(see paragraph 1.1.3.1.)"

Annex 3

DRAFT CORRIGENDUM 1 TO SUPPLEMENT 2 TO THE 02 SERIES OF AMENDMENTS
TO REGULATION No. 49, ADOPTED BY THE MEETING OF EXPERTS
(Emissions of C.I., N.G. and P.I. (LPG) engines)

Annex 4 - Appendix 1,

Paragraph 2.2.3., correct to read:

"2.2.2.3. In the case of LPG-fuelled engines:

$$G_{EXH} = G_{AIR} + G_{FUEL}$$

or

$$V'_{EXH} = V''_{AIR} - G_{FUEL} \quad (\text{dry exhaust volume})$$

or

$$V''_{EXH} = V''_{AIR} + G_{FUEL} \quad (\text{wet exhaust volume})"$$

Annex 4 - Appendix 3,

Paragraph 1.3.3., [amend to read]:

"1.3.3. Total sampling type with CO₂ measurement and carbon balance method

$$G_{EDF,i} = \frac{206 \times G_{FUEL,i}}{CO_{2D,i} - CO_{2A,i}} \quad (\text{C.I. engines})$$

or

$$G_{EDF,i} = \frac{195 \times G_{FUEL,i}}{CO_{2D,i} - CO_{2A,i}} \quad (\text{LPG-fuelled engines})$$

or

$$G_{EDF,i} = \frac{171 \times G_{FUEL,i}}{CO_{2D,i} - CO_{2A,i}} \quad (\text{NG-fuelled engines})"$$

Annex 4

DRAFT AMENDMENTS TO THE PROPOSAL FOR DRAFT SUPPLEMENT 2 TO REGULATION No. 67,
ADOPTED BY THE MEETING OF EXPERTS
(Equipment for liquefied petroleum gas)
(document TRANS/WP.29/R.808)

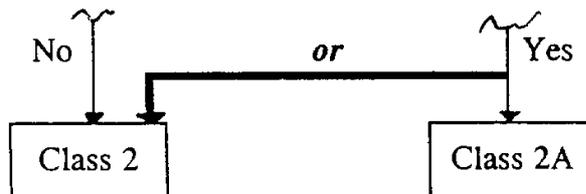
The introductory clause, title and scope, correct to read:

"Regulation No. 67, amend to read:

"UNIFORM PROVISIONS CONCERNING:

- I. APPROVAL OF SPECIFIC EQUIPMENT OF MOTOR VEHICLES
USING LIQUEFIED PETROLEUM GASES IN THEIR PROPULSION SYSTEM
 - II. APPROVAL OF A VEHICLE FITTED WITH SPECIFIC EQUIPMENT
FOR THE USE OF LIQUEFIED PETROLEUM GASES IN ITS PROPULSION SYSTEM
WITH REGARD TO THE INSTALLATION OF SUCH EQUIPMENT
1. SCOPE
- This Regulation applies to:
- 1.1. Part I. Approval of specific equipment of motor vehicles using
liquefied petroleum gases in their propulsion system;
 - 1.2. Part II. Approval of a vehicle fitted with specific equipment
for the use of liquefied petroleum gases in its
propulsion system with regard to the installation of
such equipment."

Paragraph 2, Figure 1, in the second lozenge amend the words "Safety valve" to
read "Safety valves"; in addition, insert a following liaison between the
rectangles of "Class 2" and "Class 2A":



Paragraph 2.1., amend to read:

- "2.1. "Pressure" means relative pressure ~~or overpressure~~ [versus
atmospheric pressure], unless otherwise stated.
- [2.1.1. "Service pressure" means the settled pressure at a uniform gas
temperature of 15 °C.
- 2.1.2. "Test pressure" means the pressure to which the component is
subjected during the approval test.

- 2.1.3. "Working pressure" means the maximum pressure to which the component is designed to be subjected and on the basis of which its strength is determined.]
- 2.1.4. "Operating pressure" means the pressure under normal operating conditions.
- 2.1.5. "Maximum operating pressure" means the maximum pressure in a component which might arise during operation.
- 2.1.6. "Classification pressure" means the maximum allowable operating pressure in a component according to its classification."

Paragraph 2.2., add at the end the following text:

[".....
(q) pressure relief device (fuse), temperature triggered"]

Paragraph 2.5., amend to read:

- "2.5. "Accessories fitted to the container" means the following equipment which may be either separate or combined:
(a) 80 per cent stop valve
(b) level indicator
(c) pressure relief valve
(d) remotely controlled service valve with excess flow valve
(e) fuel pump
(f) multivalve
(g) gas-tight housing
(h) power supply bushing
(i) non-return valve"

Insert a new paragraph 2.5.3.1., to read:

["2.5.3.1. "Pressure relief device (fuse)" means a device that opens to relieve the pressure when the temperature rises above 110 °C, to protect the container in case of fire."]

Paragraph 2.5.4., shall read the text of paragraph 2.6.

Paragraph 2.5.5., shall read the text of paragraph 2.7.

Paragraph 2.5.6., shall read the text of paragraph 2.8., amended as follows:

"2.5.6. "Multivalve" means a device consisting of all or part of the accessories mentioned in paragraphs 2.5.1. to 2.5.3. and 2.5.8.;"

Paragraph 2.5.8., amend to read:

"2.5.8. power supply bushing (fuel pump/actuators/fuel level sensor),"

Paragraph 2.5.9., shall read the text of paragraph 2.12.

Paragraphs 2.9. to 2.11., renumber as paragraphs 2.6. to 2.8.

Paragraphs 2.13. to 2.23., renumber as paragraphs 2.9. to 2.19.

Paragraph 4.3., amend to read:

- "4.3. Every container shall also bear a marking plate, welded to it, with the following data clearly legible and indelible:
- (a) serial number;
 - (b) the capacity in litres;
 - (c) the marking "LPG";
 - (d) test pressure [bar];
 - (e) year and month of approval (e.g. 99/01);
 - (g) approval mark according to paragraph 5.4.;
 - (h) the marking "PUMP INSIDE" and a marking identifying the pump when a pump is mounted in the container."

Paragraphs 6.8. to 6.13., amend to read "(not allocated)" and delete the corresponding footnotes 2/ and 3/.

Paragraph 6.14.2.3., amend to read:

- "6.14.2.3. The power supply bushing (fuel pump/actuators/fuel level sensor) to establish an isolated and tight electrical connection shall be of a hermetic sealed type."

Paragraph 6.14.7.1., amend the value of "3,200 ± 200 kPa" to read "3,200 ± 100 kPa".

Paragraph 6.14.8.2., amend the value of "2,500 ± 200 kPa" to read "2,700 ± 100 kPa".

Insert new paragraphs 6.14.8.5. to 6.14.8.7., to read:

- ["6.14.8.5. The pressure relief device (fuse) shall be designed to open at a temperature of 110 ± 10 °C.
- 6.14.8.6. The pressure relief device (fuse) shall have no leakage up to 2,800 kPa.
- 6.14.8.7. The pressure relief device (fuse) shall be designed to have a flow capacity of:
- $$Q = 10.66 \cdot A^{0.82}$$

where:

- Q = flow in m³/min (at the air pressure of 100 kPa absolute and temperature of 15 °C)
- A = exterior surface of the container in m²"]

Paragraph 6.14.10.1. (second occurrence), renumber as paragraph 6.14.10.2. and amend to read:

"6.14.10.2. The filling unit shall be protected against contamination."

Paragraphs 6.14.10.2. (former), renumber as paragraph 6.14.10.3., and amend the words "The filling point" to read "The filling unit".

Paragraph 6.14.10.3., renumber as paragraph 6.14.10.4.

Paragraph 6.14.11.1., amend to read:

"6.14.11.1. The device to verify the level of liquid in the container shall be of an indirect type (for example magnetic) between the inside and outside of the container. If the device to verify the level of liquid in the container is of a direct type, the electric power connections should meet Class 1 specifications."

Paragraph 6.14.12.1., amend to read:

"6.14.12.1. The gas-tight housing outlet shall have a total free-cross-section of at least 450 mm²."

Paragraph 7.1.2., correct to read:

"7.1.2. consider whether retesting will be partial or complete."

Paragraph 9.8., correct the reference to "annex 10, paragraph 3.1.2." to read "annex 10, paragraph 2.1.2."

Paragraphs 14.1.2. to 14.1.2.3., amend to read:

"14.1.2. "Vehicle type" means a vehicle or a family of vehicles fitted with specific equipment for the use of LPG in its propulsion system, which do not differ with respect to the following conditions:

14.1.2.1. the manufacturer;

14.1.2.2. the type designation established by the manufacturer;

14.1.2.3. the essential aspects of design and construction;

14.1.2.3.1. chassis/floor pan (obvious and fundamental differences);

14.1.2.3.2. installation of the LPG equipment (obvious and fundamental differences)."

Paragraph 16.4., correct the reference to "paragraph 16.2. above" to read "paragraph 16.3. above".

Paragraph 17.1.7., should be deleted.

Paragraphs 17.1.9. to 17.1.9.2., amend to read:

"17.1.9. Identification of LPG-fuelled M2 and M3 category vehicles.

17.1.9.1. Vehicles of category M2 and M3 shall carry a plate as specified in annex 16.

17.1.9.2. The plate shall be installed on the front and rear of the M2 or M3 category vehicle and on the outside of the doors on the left-hand side for the right hand drive vehicles and on the right-hand side for the left hand drive vehicles."

Paragraph 17.2.1., amend to read:

"17.2.1. No component of the LPG-system, including any protective materials which form part of such components, shall project beyond the external surface of the vehicle, with the exception of the filling unit if this does not project more than 10 mm beyond the nominal line of the body panel."

Insert a new paragraph 17.3.1.13., to read:

["17.3.1.13. Pressure relief device (fuse)"]

Paragraph 17.3.2.8., amend to read:

"17.3.2.8. power supply bushing for the container (actuators/fuel pump/fuel level sensor);"

Paragraph 17.4.5., amend the value of "250 mm" to read "200 mm".

Paragraph 17.4.6., amend to read:

"17.4.6. The fuel container(s) must be mounted and fixed so that the following accelerations can be absorbed (without damage occurring) when the containers are full:

Vehicles of categories M1 and N1:

(a) 20 g in the direction of travel

(b) 8 g horizontally perpendicular to the direction of travel

Vehicles of categories M2 and N2:

(a) 10 g in the direction of travel

(b) 5 g horizontally perpendicular to the direction of travel

Vehicles of categories M3 and N3:

(a) 6.6 g in the direction of travel

(b) 5 g horizontally perpendicular to the direction of travel

A calculation method can be used instead of practical testing if its equivalence can be demonstrated by the applicant for approval to the satisfaction of the technical service."

Paragraphs 17.4.6.1. to 17.4.6.4., should be deleted.

Paragraphs 17.6. to 17.6.9.3., should be deleted.

Paragraphs 17.7. to 17.12.7., renumber as paragraphs 17.6. to 17.11.7.

Paragraph 17.8.6., correct the words "vibration of stresses" to read "vibration or stresses".

Paragraph 17.9.1. (French only), amend to read:

"17.9.1. Les raccords soudés ou brasés ne sont pas autorisés, ni les raccords à compression de type cranté."

Paragraph 17.9.8., amend to read:

"17.9.8. In a passenger compartment or enclosed luggage compartment the gas tube or hose shall be no longer than reasonably required; this provision is fulfilled when the gas tube or hose does not extend further than from the fuel container to the side of vehicle."

Paragraph 17.9.8.1., should be deleted.

Paragraph 17.9.8.2., renumber as paragraph 17.9.8.1.

Paragraph 17.9.8.3., renumber as paragraph 17.9.8.2., and amend to read:

"17.9.8.3. The provisions of paragraphs 17.9.8. and 17.9.8.1. shall not apply for M2 or M3 category vehicles if the gas tubes or hoses and connections are fitted"

Paragraph 17.10.4., amend to read:

"... is cut off when the engine is not running or, if the vehicle is also equipped with another fuel system, when the other fuel is selected. A delay of 2 seconds is permitted for diagnostic purposes."

Paragraph 17.12.4., amend the reference to "DIN 40050" to read "IEC 529" (as in paragraphs 6.14.2.1. and 6.14.2.2.).

Annex 1,

Item 0.4., should be deleted.

Item 1.2.4.5. 1/, amend to read:

"1.2.4.5. Description of the LPG fuelling equipment:"

1/ Note by the secretariat: If there is no particular reason for the complex numbering system (item 1.2. is followed by item 1.2.4.5.), annex 1 should be considered for renumbering.

Items 1.2.4.5.2.4., 1.2.4.5.5.3. and 1.2.4.5.7.6., 2/ should be deleted.

Items 1.2.4.5.12. (second appearance) to 1.2.4.5.18.5., renumber as items 1.2.4.5.13. to 1.2.4.5.18.5.

Annex 3,

Paragraph 4.1., amend the reference to "paragraph 2.6." to read "paragraph 2.5.4."

Paragraph 6., the footnotes */ and **/ should be deleted.

Annex 4,

Paragraph 1., amend the reference to "paragraph 2.7." to read "paragraph 2.5.5."

Annex 5, paragraph 6.2., annex 6, paragraph 6.2. and annex 11, paragraph 1.6., 3/ amend the words "Corrosion resistance Annex 15, para. 12" to read "Corrosion resistance Annex 15, para. 12 */".

Annex 6,

Paragraph 1., amend the reference to "paragraph 2.9." to read "paragraph 2.6." and the reference to "paragraph 2.10." to read "paragraph 2.7."

Annex 7,

The title, 4/ add at the end the following text:

[".... PRESSURE RELIEF DEVICE (FUSE)"]

Paragraph 1.1., amend the reference to "paragraph 2.11." to read "paragraph 2.8."

Paragraph 2.1., amend the reference to "paragraph 2.12." to read "paragraph 2.5.9."

Paragraph 3., 4/ amend to read:

"3. Provisions regarding the approval of the gas-tube relief valve
[and the pressure relief device (fuse)]

2/ Note by the secretariat: This will create gaps in the numbering system. Should the deleted items be marked as "(not allocated)", or annex 1 entirely renumbered? - see also note 4/ above.

3/ An additional amendment to document TRANS/WP.29/GRPE/1998/2.

4/ Note by the secretariat: As originally proposed by Italy, in informal document No. 14. However, the relevant provisions seem to be more relevant for introduction into annex 3.

Paragraph 3.1., amend the reference to "paragraph 2.13." to read "paragraph 2.9."

Paragraph 4.1., amend the reference to "paragraph 2.21" to read "paragraph 2.17."

Annex 8,

Paragraphs 3.6.2. to 3.6.5.3., renumber as paragraphs 3.5.3. to 3.5.5.3.

Annex 9,

Paragraph 1., amend the reference to "paragraph 2.20." to read "paragraph 2.16."

Annex 10,

Paragraph 1.2.4., correct to read:

"1.2.4. The filler materials must be compatible with the parent material so as to form welds ..."

Paragraph 1.5.1.2., delete the words "and per machine".

Paragraph 2.1.2., correct the word "test" to read "tests".

Annex 10 - Appendix 4, the title of the both diagrams should read:

"Relationship between H/D and Shape factor C"

and correct the captions below the diagrams - for the first one the text should read "Values of Shape factor C for H/D between 0.2 and 0.25", for the second one "Values of Shape factor C for H/D between 0.25 and 0.50"

Annex 11,

Paragraph 1.1. and 1.2., amend the references to "paragraph 2.14." to read "paragraph 2.10."

Paragraph 3.1., amend the reference to "paragraph 2.22." to read "paragraph 2.18."

Annex 12,

Paragraph 1., amend the reference to "paragraph 2.15., to read "paragraph 2.11."

Annex 13, paragraph 1., correct to read:

"1. Definition:
 Pressure sensor: see paragraph 2.13. of this Regulation.
 Temperature sensor: see paragraph 2.13. of this Regulation."

Annex 15,

Paragraph 4, the reference to "Table 1" and the Table 1 itself, renumber as "Table 2".

Paragraph 5.1., correct the reference to "paragraph 5.2." to read "paragraph 5.3."

Paragraph 5.3., amend to read:

".... of aerostatic pressure (of 1.5 times the maximum pressure and in the case of a class 3 component, 2.25 times the maximum classification pressure). A positive shut-off valve and"

Paragraph 5.3., Table 2, renumber as "Table 3".

Paragraphs 6. and 7., 8.4., amend the reference to "Table 2, paragraph 5.3." to read "Table 3, paragraph 5.3."

Paragraph 8.1., correct the reference to "paragraph 3 above" to read "paragraph 5 above".

Paragraph 8.1.2., correct to read:

"8.1.2. Conformance with paragraphs 8.2. to 8.5. below is to be determined by connecting"

Paragraph 9.1., correct to read:

"... to the applicable leakage test requirements of paragraphs 5 and 8, after being subjected to"

Paragraph 9.4., correct to read:

"... as described under external leakage test under paragraph 5 and seat leakage test under paragraph 8 are to be conducted ..."

Paragraph 10.1.2.3., correct to read:

"10.1.2.3. A pressure relief valve is to be connected of the valve being tested. A positive shut-off valve and a pressure gauge having a pressure range of not less than 1.5 times nor more than 2 times the test pressure are to be installed in the pressure supply piping. ^{5/} The pressure gauge is to be"

Paragraph 10.2.12., correct the reference to "paragraphs 8.2.4. to 8.2.7." to read "paragraphs 10.2.4. to 10.2.7."

^{5/} This sentence is to be corrected in English only, the French and Russian texts are correct.

Paragraph 10.5.6.1., correct the reference to "paragraph 8.5.4." to read "paragraph 10.5.4."

Paragraph 12.1., correct to read:

"....
or an optional test:"

Paragraph 15., correct the reference to "paragraphs 3, 4 and 5" to read "paragraphs 5, 6 and 7".

Paragraph 16., correct to read:

"the leakage tests mentioned in paragraphs 5, 6 and 7 after
having been"

Annex 16, the title, amend to read:

"PROVISIONS REGARDING LPG IDENTIFICATION MARK FOR M2 AND M3 CATEGORY VEHICLES"

Annex 17, the title, amend to read:

"PROVISIONS REGARDING IDENTIFICATION MARK FOR SERVICE COUPLING"

Annex 5

DRAFT AMENDMENTS TO THE PROPOSAL FOR A DRAFT REGULATION CONCERNING THE SPECIFIC EQUIPMENT OF MOTOR VEHICLES FUELLED BY CNG, ADOPTED BY THE MEETING OF EXPERTS (documents TRANS/WP.29/GRPE/R.269 and TRANS/WP.29/GRPE/1998/8)

Paragraph 2.13., correct to read:

"2.13. "Service valve" means an isolation valve which is closed only when servicing the vehicle."

Paragraph 2.20., correct the word "tha" to read "the".

Paragraph 2.23., correct the word "ti" to read "to".

Paragraph 6.3.1., amend the word "accessories" to read "components".

Paragraphs 6.8. to 6.12., should be deleted.

Paragraph 9.3., amend the reference to "(class 0, 1, 2)" to read "(class 0, 1)".

Part II,

The title, and paragraph 14.1.2., amend the words "specific component" to read "specific components".

Paragraphs 15.1., 16.1. and 17., amend the word "component" to read "components".

Paragraph 17.4.3., amend the value "250" to read "200".

Paragraph 17.4.3.2., amend to read:

"17.4.3.2. The fuel container(s) or cylinder(s) must be mounted and fixed so that the following accelerations can be absorbed (without damage occurring) when the containers are full:

Vehicles of categories M1 and N1:

- (a) 20 g in the direction of travel
- (b) 8 g horizontally perpendicular to the direction of travel

Vehicles of categories M2 and N2:

- (a) 10 g in the direction of travel
- (b) 5 g horizontally perpendicular to the direction of travel

Vehicles of categories M3 and N3:

- (a) 6.6 g in the direction of travel
- (b) 5 g horizontally perpendicular to the direction of travel

A calculation method can be used instead of practical testing if its equivalence can be demonstrated by the applicant for approval to the satisfaction of the technical service."

Paragraphs 17.5.1. and 17.5.1.1., amend to read:

"17.5.1. Automatic valve

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

Paragraphs 17.8. to 17.8.3., amend to read:

"17.8. Automatic valve

17.8.1. An automatic valve shall be installed in each CNG container.

17.8.2. An additional automatic valve may be installed in the fuel line as close as possible to the pressure regulator.

17.8.3. The automatic valve shall be operated such that the fuel supply is cut off when the engine is switched off, irrespective of the position of the ignition switch, and shall remain closed while the engine is not running."

Paragraph 17.9.2., amend the words "filling point" to read "filling unit".

Annex 4A,

Paragraph 3.2.1., amend the words "operating pressure" to read "working pressure".

Paragraph 3.2.4., amend the words "shut-off valve" to read "check valve".

Paragraph 4.1., amend the words "pressure and temperature relief valve" to read "pressure relief valve and pressure relief device".

Annex 4D,

Paragraphs 4.1.1., 4.1.2., 4.1.3. and 4.1.4., amend the words "operating pressure" to read "working pressure" (4 times).

Paragraph 4.1.4., delete the words "be leak proof (see annex 5B) at...".

Annex 4E,

Paragraph 3.1., delete the instruction to "insert at the end the following words "See Annex 5B"."

Paragraph 3.1.1., insert at the end the following words "See Annex 5B".

Paragraphs 4.1.1., 4.1.2., 4.1.3. and 4.1.4., amend the words "operating pressure" to read "working pressure" (4 times).

Annex 5, Table 1, renumbered as Table 5.1., the text below the table, reading "The materials used for the components (iv) durability" is to be maintained.

Annex 6

INFORMATION PROVIDED BY THE EUROPEAN COMMISSION

A. On 7 October 1997 the Council adopted by unanimity a common position relating to future emission limits for passenger cars and future market fuel quality (see also informal document No. 18):

1. Emission limits for passenger cars - amending Directive 70/220/EEC

1.1. **New mandatory limits** for cars will apply from 1.1.2000 for type approval and from 1.1.2001 for entry into service:

	CO (g/km)	HC (g/km)	NO _x (g/km)	HC+NO _x (g/km)	PM (g/km)
Petrol	2.3	0.20	0.15	-	-
Diesel	0.64	-	0.50	0.56	0.05

Other technical requirements:

1.2. Introduction of a **cold start test** for petrol fuelled vehicles will apply from 1.1.2002 for new approvals. Limits of 15 g/km CO and 1.8 g/km HC, measured at a temperature of -7 °C over the urban part of Type-I test cycle.

1.3. **Revised evaporative emission test procedure:** limit of 2 g/km HC will apply over a test procedure involving higher temperatures, greater changes in temperature and the 24 hour diurnal test.

1.4. **In-use conformity checking:** this procedure will allow the Member States and authorities to check emission compliance of vehicles up to 5 years of age or over 80,000 km distance.

1.5. **On-board diagnostics (OBD):** applying from 1.1.2000 for type approval of petrol-fuelled vehicles and from 1.1.2005 to diesel-fuelled vehicles. The requirement sets monitoring criteria, emission thresholds above which the OBD system must indicate a fault to the driver and store a record of that fault in its memory, and a standardized OBD communications and vehicle-diagnostic tool prescriptions. Further work still needs to be done to resolve difficulties anticipated for replacement parts on OBD equipped vehicles and improved prescriptions for the in-use conformity checking procedures.

1.6. The common position also includes **indicative emission limits for the year 2005**, to be confirmed by the Auto-Oil II Programme, to form the basis for a future fiscal incentive framework:

	CO (g/km)	HC (g/km)	NO _x (g/km)	HC+NO _x (g/km)	PM (g/km)
Petrol	1.00	0.10	0.08	-	-
Diesel	0.50	-	0.25	0.30	0.025

Article 3 of the common position refers to the Auto-Oil II Programme: the

European Commission will report by 30.6.1999 on measures to apply from 1.1.2005 to meet future air quality targets at least cost. This may involve a mixture of technical measures (such as reduced emission limits, alternative technology) and non-technical measures (such as transport management, enhanced inspection and maintenance, vehicle scrappage).

2. Quality of petrol and diesel fuels - amending Directive 93/12/EEC 1/

Mandatory requirements for the quality of petrol and diesel market fuels will apply from 1.1.2000:

For petrol this includes a Reid vapour pressure of 60 kPa (max.), benzene content of 1.0 % v/v (max.), oxygen content of 2.3. % m/m (max.), sulphur content of 150 mg/kg.

For diesel fuel this includes a cetane number of 51 (min.), density of 845 kg/m³ (max., at 15 °C) and sulphur content of 350 mg/kg.

Indicative petrol and diesel fuel quality for the year 2005 are also included, with (amongst other specifications) sulphur levels of 50 mg/kg applicable to both petrol and diesel.

Other requirements include the banning of the sale of leaded petrol in the European Community from 1.1.2000 (although Member States can claim a time-limited derogation) and the monitoring of fuel quality in the market.

3. Current situation

The Environment Committee of the European Parliament is completing its second reading, but has not agreed with the Council's common position. Conciliation between the Parliament and Council will likely take place during the term of the United Kingdom's presidency of the EU.

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B. New emission limits for light commercial vehicles

Following the European Commission's proposal of February 1997, the Council reached an agreement at the December 1997 Environment Council. The European Parliament is due to adopt a first reading on light commercial vehicles during its February plenary meeting.

In summary, the Council agreement contains:

1. **Mandatory emission limits** for petrol and diesel-fuelled vehicles of classes I, II and III:

Date of applic.	Cat.	Class	CO (g/km)		HC (g/km)		NO _x (g/km)		HC+NO _x (g/km)		PM (g/km)
			petrol	diesel	petrol	diesel	petrol	diesel	petrol	diesel	diesel
1.1.2000	N1	I	2.3	0.64	0.20	-	0.15	0.50	-	0.56	0.05
1.1.2001	N1	II	4.17	0.80	0.25	-	0.18	0.65	-	0.72	0.07
1.1.2001	N1	III	5.22	0.95	0.29	-	0.21	0.78	-	0.86	0.10

1/ Official Journal of the European Communities, C 351, Vol. 40, 19.11.1997.

Note: To align the reference mass classes with the revision to the inertia mass divisions adopted in Directive 96/44/EC, classes I, II and III are defined as follows:

Class I: 1,305 kg ≥ reference mass
Class II: 1,305 kg < reference mass < 1,760 kg
Class III: reference mass ≥ 1,760 kg

The limits shown above may also apply to:

- (a) vehicles of category M1, whose maximum mass is greater than 2,500 kg;
- (b) until 1.1.2003 to vehicles of class M1 powered by a diesel engine and having maximum mass greater than 2,000 kg and:
 - (i) for carrying more than 6 occupants, including the driver, or
 - (ii) defined as off-road.

The Council agreed that the European Commission shall bring forward, by 1.6.1999, cold start limits for classes II and III, to apply at the latest in 2003.

On-board diagnostics limits applicable to all reference mass classes apply from 1.1.2000 to petrol engined vehicles and from 1.1.2005 to diesel engined vehicles.

2. **Indicative emission limits for the year 2005 for all mass classes**, to be confirmed by the Auto-Oil II Programme, to form the basis for a future fiscal incentive framework in the EU:

Date of applic.	Cat.	Class	CO (g/km)		HC (g/km)		NO _x (g/km)		HC+NO _x (g/km)		PM (g/km)
			petrol	diesel	petrol	diesel	petrol	diesel	petrol	diesel	diesel
2005	N1	I	1.0	0.50	0.10	-	0.08	0.25	-	0.30	0.25
2005	N1	II	1.81	0.63	0.13	-	0.10	0.33	-	0.39	0.04
2005	N1	III	2.27	0.74	0.16	-	0.11	0.39	-	0.46	0.06