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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Working Party on the Construction of Vehicles

Working Party on Noise (GRB)

REPORT OF THE WORKING PARTY ON NOISE (GRB)  
ON ITS THIRTY-FIRST SESSION

(16 and 17 September 1999)

1. GRB held its thirty-first session from 16 to 17 September 1999 under the chairmanship of Mr. H. Löffelholz (Germany). Experts from the following countries participated in the work: Czech Republic; France; Germany; Hungary; Italy; Netherlands; Norway; Poland; Russian Federation; Slovakia; Spain; Sweden; Switzerland; United Kingdom; United States of America. Representatives of the European Commission (EC) 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 took part in the session: International Organization for Standardization (ISO); International Organization of Motor Vehicle Manufacturers (OICA); International Motorcycle Manufacturers Association (IMMA); European Tyre and Rim Technical Organization (ETRTO); Liason Committee for the Manufacturer of Automobile Equipment and Spare Parts (CLEPA).
2. The documents without a symbol distributed during the session are listed in annex 1 to this report.

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TYRE-ROAD NOISE LIMITATION

Documentation: TRANS/WP.29/GRB/1999/2; TRANS/WP.29/GRB/1999/3;  
TRANS/WP.29/GRB/1999/5; TRANS/WP.29/GRB/1999/6; TRANS/WP.29/GRB/1999/7;  
TRANS/WP.29/GRB/1999/9; informal documents Nos. 7 and 8 of annex 1 to this  
report.

3. The Chairman informed GRB about results from discussion within the EU Council where a proposal for a EC Directive was being examined. He said that the Working Party on Economic Questions of the European Union Council had agreed, with some modifications, on test method and specification of the test site, based on the prescriptions adopted by GRB during its previous session of February 1999 (TRANS/WP.29/GRB/1999/3).

4. With regard to tyre/road noise limits, the Chairman informed GRB that the above EU working group had agreed on values, while, for the definition of type of tyres, no majority opinion had been found so far. He concluded his introduction by inviting GRB to adopt the decision taken in the EC and to contribute to finding out an agreement on the subjects still under discussion.

5. The expert from the European Commission confirmed that the EU Working Party on Economic Questions had agreed on tyre/noise limits and said that further meetings had been scheduled by the Finnish EU presidency in order to finalize the entire proposal.

6. GRB agreed to examine in detail the proposal for a new draft Regulation on rolling sound emissions presented by ETRTO (TRANS/WP.29/GRB/1999/5). In the discussion which followed many amendments were proposed and some of them agreed (see annex 2 to this report). However, a suitable definition of type of tyres was not found, since some delegations (e.g. the United Kingdom) believed that the one proposed by ETRTO was not detailed enough to cover all tyre characteristics affecting tyre/road noise emissions.

7. In this respect the expert from ETRTO expressed his concern on the request from the United Kingdom to have a more detailed definition of tyre type and reminded GRB that such definition would require technical services to carry out thousands of type approval tests throughout Europe (about 80,000) during the first few years after the entry into force of the Regulation. Therefore, he expressed the intention of his organization to cooperate in finding a suitable tyre type definition and invited the experts to avoid not manageable burden for the manufacturers.

8. The expert from the United States of America recalled the need for a world-wide harmonization of tyre regulations and invited the group to defer any decision to the time after the entry into force of the Global Agreement, that in his opinion should also deal with this subject.

9. The expert from France drew the attention of GRB to the possibility given to manufacturers to be designated as technical service for testing noise emitted by tyres. He said that this opportunity might not be compatible with the prescriptions of the EC Directive 70/156/EC as lastly amended by EC Directive 98/14/EC (framework Directive on type approval of vehicles and

their components) which, in his opinion, did not allow manufacturers to be designated as technical services. Following the suggestion by the secretariat, and having considered the administrative implications of the proposal, it was agreed that the subject should be dealt with at a later stage, preferably at a higher level (WP.29).

10. Following a proposal made by the expert from the United Kingdom, GRB agreed to add some administrative prescriptions regarding the conformity of production. The Chairman also invited the experts to propose, if necessary, transitional provisions.

11. GRB agreed to resume discussion of the draft regulation on tyre/road noise on the basis of document TRANS/WP.29/GRB/1999/5 which he proposed should be revised according to the amendments suggested in annex 2 to this report. The secretary was also asked to issue with an official symbol informal document No. 7 which was distributed during the session by the expert from the United Kingdom.

12. GRB considered again the text of technical annexes concerning the test method and the test site (TRANS/WP.29/GRB/1999/3), in order to consider some amendments agreed by the EU Council (see para. 3 above).

13. The expert from France reminded GRB that, in the future, new types of commercial vehicle tyres having a much wider cross-section would be put on the market, in order to replace tyres intended for dual mounting (twinning). He recalled his proposal to modify the test method for measuring the tyre/road noise level in order to allow a different form of mounting these tyres on a test vehicle (TRANS/WP.29/GRB/1999/2). He said that such amendment would avoid the risk of exceeding the permissible maximum mass on the front axle as well as difficulties of mounting very wide tyres on the front axle, resulting in a large increase in the turning radius and a poor manoeuvrability of the vehicle.

14. The French proposal was supported by the expert from Germany, while the expert from the United Kingdom would have preferred to apply it to tyres having a load capacity index (LI) greater than 160 and a minimum width of 385 mm. However, after some clarification, it was agreed to adopt the text suggested by the expert from France and to amend accordingly the relevant technical annex of document TRANS/WP.29/GRB/1999/3.

15. The expert from Japan recalled his proposal to delete the reference to the load capacity index (LI) and to consider a deduction, estimated to 3 dB(A), from the measured noise level in order to eliminate the influence of tyres mounted on the front axle (TRANS/WP.29/GRB/1999/6). Besides, on the basis of research results made in Japan, he suggested that in addition to a fitting procedure applicable to tyres of class C2 and C3 a revision of the test procedure and of interpretation of results would also be necessary (TRANS/WP.29/GRB/1999/9).

16. GRB noted that the proposal from Japan should be studied in detail and might be considered in the future after the adoption of the Regulation. Therefore, the secretary was requested to replace the original proposal by Japan (TRANS/WP.29/GRB/1999/6) with document TRANS/WP.29/GRB/1999/9 in the agenda for the next session.

17. Consideration was given to the alternative proposal presented by the expert from ETRTO (TRANS/WP.29/GRB/1999/7) concerning information to be included in the text report. GRB agreed to examine the proposal in detail at its next session.

18. GRB also agreed to resume at its next session consideration of technical annexes on the basis of document TRANS/WP.29/GRB/1999/3, as amended during the session (see annex 3 to this report), and documents TRANS/WP.29/GRB/1999/9 and TRANS/WP.29/GRB/1999/7.

AMENDMENTS TO REGULATION No. 51 (Noise of M and N categories of vehicles)

Documentation: Informal documents Nos. 2, 4, 5 and 6 of annex 1 to this report.

19. The expert from Germany presented results of an investigation for improving the method of noise measurement for motor vehicles (informal document No. 5). He said that the report contained a detailed presentation of the driving and operating modes of vehicles examined in real operation, and that tyre/road noise and engine/transmission noise components had been identified. Furthermore, a comparison between modes of operation in the present measuring method and in the reality had been made, with the aim to develop two separate testing procedures for passenger cars, and commercial vehicles.

20. With regard to passenger cars, the expert from Germany said that the study had shown that the main variables for establishing representative driving conditions for real operation were the power-to-weight ratio, the vehicle acceleration and the final speed. On the basis of the above variables the operating state of a vehicle should be defined by a target acceleration, to be determined on the basis of power-to-weight ratio, and by a limit for the normalized engine speed at the end of the test track. Therefore, the appropriate gear ratio should be chosen so that the target acceleration is attained. With regard to commercial vehicles, he said that the new measuring method should require a normalised engine speed of 85 per cent of the rated speed and acceleration ranging from 1 to 1.5 m/s<sup>2</sup>, and that the gear ratio should be chosen in order to attain normalised engine speed.

21. The expert from Germany also informed GRB that a proposal for draft amendments to Regulation No. 51 had been prepared (informal document No. 4) for future consideration.

22. The expert from OICA introduced a proposal for a new noise measurement procedure (informal document No. 2) which had been developed by the Association of European Vehicle Manufacturers (ACEA), on the basis of actual driving pattern with the aim to reflect real traffic conditions. In particular he said that vehicle acceleration should be simulated by a combination of a full throttle test (acceleration from 50 km/h) and a constant speed (50 Km/h) test, to be carried out using two consecutive gear ratios, selected in order to attain the required acceleration. Finally he added that a partial torque factor should apply, in order to determine sound level.

23. A contribution to the discussions on urban acceleration levels was given by the expert from ISO (informal document No. 6). He said that ISO working group was studying a revision of ISO 362 standard dealing separately with

passenger cars, commercial vehicles and motorcycles and that a committee draft was expected for the year 2001, while a final procedure should be set by 2002. He presented some proposals for new measurement methods under consideration in ISO working group, based on:

- (i) a fixed end speed of about 55 km/h and a reported noise level calculated, and taking into account sound levels measured with accelerations in the second and third gear and a target acceleration value placed in between the extreme values achieved in the second and third gear;
- (ii) combination of test measurements in acceleration and at a constant speed (multi-mode test for passenger cars).

He concluded by saying that the current test cycles were very aggressive and over-emphasized tyre/road and powertrain noise.

24. The expert from the Netherlands said that the contribution by tyre/road noise had increased during the coast-by test. However, he deemed that the present testing procedure was still reliable.

25. The expert from the United States of America reiterated that the new testing cycle should better assess the impact of noise traffic flow on communities and that GRB should look at improving the quality of life of people. He also recalled that, although strict noise limits were established by Regulation No. 51, the reduction of average noise level produced by traffic flow was not satisfactory. He stressed that high accelerations were mainly responsible for noise in urban areas, while high speed (cruising) was the principal factor to be considered outside urban areas. He also added that noise produced by gear shift of heavy duty vehicles and by motorcycle acceleration had been a matter of concern in his country.

26. The expert from IMMA stated that motorcycle were not the principal source of noise anymore. However, he confirmed that noise generated by illegally modified motorcycle exhaust system remained a concern for the industry.

27. In the discussion which followed, the experts had the opportunity to make comments and receive clarifications concerning the proposals by OICA and Germany. In particular, the expert from Spain invited GRB to consider other indicators than dB(A) for indicating noise emissions (e.g. sharpness, frequency analysis). He also considered the proposal by OICA (see para. 22 above) based on the average of two test results as a not suitable solution. In response to the above comment the expert from OICA replied that dB(A) represented a reliable indicator to be used in a type approval test.

28. The Chairman noted that an agreement on test noise method could not still be found and invited the experts to prepare for final decisions at the next GRB session. He said that GRB should be able to decide if either a new procedure was necessary or the present method should be retained and the noise limits revised.

29. GRB agreed to continue the consideration of this matter at the next session.

AMENDMENTS TO REGULATION No. 59 (Replacement silencing systems)

Documentation: TRANS/WP.29/GRB/1998/10.

30. The expert from Poland recalled his proposal, as amended during the thirtieth session (TRANS/WP.29/GRB/28, para. 31), for incorporating into paragraph 1 of the Regulation a reference to Regulation No. 103 (TRANS/WP.29/1998/10). He said that the proposal would ensure that, if the replacement silencing systems comprised also a catalytic converter, the latter would be approved according to Regulation No. 103. As a consequence no further approval according to Regulation No. 59 would be necessary for catalytic converters already approved under Regulation No. 103.

31. The expert from France reminded GRB that catalytic converters may also influence noise emitted by a vehicle and said that in his opinion they should also be tested pursuant Regulation No. 59. The expert from Germany suggested that the proposal from Poland should be completed with an amendment to Regulation No. 103, in order to exempt catalytic converters approved under Regulation No. 103 to be tested according to Regulation No. 59.

32. In this respect, the expert from Poland informed the group that his delegation would present at the next session of the Working Party on Pollution and Energy, (GRPE) scheduled from 11 to 14 January 2000, a proposal to amend Regulation No. 103.

33. GRB agreed to continue the consideration of this matter at the next session and to consider the results from the discussion in GRPE.

AMENDMENTS TO REGULATION No. 63 (Noise of mopeds)

Documentation: TRANS/WP.29/GRB/1998/11.

34. The secretariat recalled that a section of the proposal from Belarus (TRANS/WP.29/1998/11) had been adopted by GRB at its twenty-ninth session (TRANS/WP.29/GRB/27, paras. 30 and 31 ) while it had been requested to ask the experts from Belarus to provide GRB with more detailed explanations concerning the remaining part of the proposal. In this respect, the secretariat informed GRB that no further information had been provided by Belarus so far.

35. In the absence of any clarification from Belarus, GRB agreed to suppress the proposal from the agenda of the coming sessions.

AMENDMENTS TO REGULATION No. 28 (Audible warning devices)

Documentation: TRANS/WP.29/GRB/1999/8.

36. The expert from CLEPA introduced a proposal to amend Regulation No. 28, (TRANS/WP.29/GRB/1999/8) in order to allow the use of any voltage level for the approval of the audible warning devices (AWDs). He said that the use of new voltage levels, other than 6, 12 or 24 volts, were being studied for new vehicles, so that the Regulation needed do be adapted to technical progress. In concluding his presentation, the expert from CLEPA informed GRB that some administrative updates concerning the conformity of production had also been proposed.

37. The proposal was supported by the experts from France, Italy, Japan, Spain, United Kingdom and OICA, and adopted by GRB with the deletion of the amendments concerning paragraphs 2.8., 2.9. and 2.10., contained in document TRANS/WP.29/GRB/1999/8.

38. GRB requested the secretariat to transmit the adopted proposal to the Working Party and to the Administrative Committee AC.1 for consideration at its fourteenth session (March 2000). However, since the proposal by CLEPA related to electric matters, it was agreed to transmit it first to the Working Party on Lighting and Light-Signalling (GRE), scheduled from 4 to 8 October 1999, in order to receive a preventive assent. On the basis of GRE decision the proposal from CLEPA will be either submitted to WP.29 or returned to GRB or GRE for further discussions.

Note by the secretariat: GRE, at its forty third session (4-8 October 1999) agreed on the proposal and suggested that a tolerance concerning the rated voltage should be introduced. It was also agreed to correct the formula in paragraph 6.2.5. of document TRANS/WP.29/GRB/1999/8 as follows:

"6.2.5.           .....  
                  ..... the resistance of the connecting leads, expressed in ohms, including terminals and contacts, shall be as close as possible to  $[0.10/12] \times$  rated voltage in volts."

#### EXCHANGE OF INFORMATION ON NATIONAL AND INTERNATIONAL REQUIREMENTS ON NOISE LEVELS

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

39. The expert from Japan informed GRB that motor vehicle noise regulation in his country had been revised with regard to commercial vehicles exceeding 3.5 t, small sized two-wheeled motor vehicles having an engine capacity < 0.25 liters, and motor cycles having an engine capacity over 0.05 liters and not more than 0.125 liters. He said that for the above vehicle categories a new measurement method of steady running noise would apply from the year 2001 and that new noise limits had been set (informal document No. 1). Furthermore, he confirmed that the new JIS D8301 road surface, used for testing vehicles, would have the same characteristics as the ISO surface required by Regulation No. 51.

#### OTHER BUSINESS

##### (a) Traffic noise modelling

Documentation: Informal document No. 3 of annex 1 to this report.

40. The expert from Norway informed GRB that a model for determining road traffic noise, developed in cooperation with other Nordic countries, was going to be revised, in order to better represent noise sources and the distribution of noise from vehicles. He said that tests were being carried out at a Swedish laboratory as part of the so called Nordtest project, whose results would support the source model which is expected to be completed by the year 2001-2002 and would be transmitted to the European Commission as a contribution to the work carried out by an appropriate working group.

41. The expert from the European Commission confirmed that the work was under way in Brussels and expressed the intention to report on the subject at the next GRB meeting.

42. The expert from Germany informed GRB that the German research institute TAV-Automotive (former FIGE) was working on the model for determining road traffic noise and said that first results would be available by the year 2000.

43. The expert from the United States of America mentioned a report titled "Trucks Noise Level Update for New Jersey" published in August 1997 by the New Jersey Department of Transportation, Division of Capitol Program Management, Bureau of Quality Management Services, Research Unit, in cooperation with the U.S. Department of Transportation, Federal Highway Administration. GRB experts can receive copy of the report by contacting the above administration.

#### AGENDA FOR THE NEXT SESSION

44. The following agenda was agreed for the thirty-second session, scheduled to be held in Geneva from 22 (14.30 h) to 25 (12.30 h) February 2000 1/:

1. Tyre-road noise

2. Amendments to Regulation No. 51 (Noise of M and N categories of vehicles)

3. Amendments to Regulation No. 59 (Replacement silencing systems)

4. Exchange of information on national and international requirements on noise levels 2/

5. Other business

5.1. Traffic noise modelling

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1/ 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.

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

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Annex 1

LIST OF INFORMAL DOCUMENTS DISTRIBUTED WITHOUT A SYMBOL DURING THE SESSION

<u>No.</u>	<u>Transmitted by</u>	<u>Agenda item</u>	<u>Language</u>	<u>Title</u>
1.	Japan	6.	E	Draft Revision of Motor Vehicle Noise Regulation in Japan - Partial Revision of Safety Regulation for Road Vehicles with regard to Motor Vehicle Noise
2.	OICA	2.	E	Passenger Car Noise Measurement Method - A New Concept Developed by ACEA
3.	Norway	7.	E	Traffic Noise Modelling
4.	Germany	2.	E	Working Document for a Proposal for Draft Amendments to Regulation No. 51
5.	Germany	2.	E	Investigations on Improving the Method of Noise Measurement for Powered Vehicles
6.	ISO	2.	E	Urban Acceleration Discussions - Status of Committee Work
7.	United Kingdom	1.	E	Draft Amendments to the Proposal for a New Draft Regulation on Rolling Sound Emission of Tyres (document TRANS/WP.29/GRB/1999/5)
8.	Japan	1.	E	Analysis for Wide Section (Super Single) Tyre

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Annex 2

PROPOSAL FOR A NEW DRAFT REGULATION: UNIFORM PROVISIONS CONCERNING THE  
APPROVAL OF TYRES WITH REGARD TO ROLLING SOUND EMISSIONS.

(Amendments to the text of document TRANS/WP/29/GRB/1999/5,  
agreed during the session by GRB)

Paragraph 1.1., the word "size" should be deleted.

Paragraph 1.1.2., amend to read:

"1.1.2. Tyres having a nominal rim diameter code # 10 (or 254 mm) or \$ 25  
(or 635 mm)."

Paragraph 1.1.4., should be deleted.

Paragraphs 1.1.5 and 1.1.6., renumber as paragraphs 1.1.4. and 1.1.5.

Paragraph 2., amend to read:

"2. Definitions

For the purpose of this Regulation, in addition to the  
definitions contained in ECE Regulations Nos. 30 and 54, the  
following definitions apply."

Paragraph 2.1., insert the relevant text between square brackets and amend to  
read:

".....  
- the rolling sound emission characteristics]."

Paragraph 2.2., insert the relevant text between square brackets.

Paragraph 2.6., should be deleted.

Paragraph 5.5., amend to read:

".....  
In such a case the additional numbers.....shall be placed  
adjacent to the symbol prescribed in paragraph 5.4.1. above."

Paragraph 5.6., amend to read:

"5.6. The approval mark shall be clearly legible and shall be moulded  
into or onto at least one sidewall."

Paragraph 5.7., should be deleted.

Paragraph 5.8., renumber as paragraph 5.7.

Paragraph 6.1., should be deleted.

Paragraphs 6.2. to 6.3.3, renumber as paragraphs 6.1. to 6.2.3.

Paragraph 6.1., amend to read:

"6.2. A type of tyres, whose representative sample tested as per.....with the requirements of this Regulation."

Paragraph 6.2.1., amend to read:

"6.2.1. For Class C1 tyres, the rolling noise emission value shall not exceed the values given below. These values apply to both normal and snow tyres and refer to the nominal section width as given in paragraph 2.17.1.1. of Regulation No. 30:

<u>Nominal Section Width (mm)</u>	<u>Limit dB(A)</u>
145 and lower	72
Over 145 up to 165	73
Over 165 up to 185	74
Over 185 up to 215	75
Over 215	76

"

Paragraph 6.2.2., amend to read:

"6.2.2. For Class C2 tyres, the rolling noise emission value with reference to its category of use (see paragraph 2.1.3. of Regulation No. 54) shall not exceed:

<u>Category of use</u>	<u>Limit dB(A)</u>
Normal	75
Snow	77
Special	78

"

Paragraph 6.2.3., amend to read:

"6.2.3. For Class C3 tyres, the rolling noise emission value with reference to its category of use (see paragraph 2.1.3. of Regulation No. 54) shall not exceed:

<u>Category of use</u>	<u>Limit dB(A)</u>
Normal	76
Snow	78
Special	79

"

Paragraph 7.1.2., insert the text "or from the approved laboratory" between square brackets.

Insert a new paragraph 10., to read:

"10. PRODUCTION DEFINITELY DISCONTINUED

If the holder of an approval completely ceases to manufacture a type of pneumatic tyre approved in accordance with this Regulation, he shall so inform the authority which granted the approval. Upon receiving the relevant communication that authority shall inform thereof the other Parties to the 1958 Agreement applying this Regulation by means of a communication form conforming to the model in annex 1 to this Regulation."

Paragraphs 10. to 11.1. (former), renumber as paragraphs 11. to 12.1.

Paragraphs 11.2 and 11.3., insert the relevant text between square brackets.

Annex 1, add after the approval mark:

". . . . .  
APPROVAL WITHDRAWN  
PRODUCTION DEFINITELY DISCONTINUED

of a type of tyres. . . . . Regulation No. XXX."

Item 5., insert the relevant text between square brackets.

Annex 2, example 1, replace the approval mark **001234-s** with **XXX R-001234-s** and amend to read:

"The approval mark..... pursuant to Regulation No. XXX under approval number 001234. The first....."

Annex 2, example 2, replace the approval mark **001234-s** with **XXX R-001234-s**.

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Annex 3

PROPOSAL FOR A NEW DRAFT REGULATION: UNIFORM PROVISIONS CONCERNING THE  
APPROVAL OF TYRES WITH REGARD TO ROLLING SOUND EMISSIONS.

(Amendments to the text of document TRANS/WP/29/GRB/1999/3,  
agreed during the session by GRB)

Paragraph 2.5.1., amend to read:

"...on the test vehicle. In the case of tyres with a load capacity index greater than 121 and with no specifications regarding dual mounting (twinning), two of the tyres shall be mounted on the rear axle, while the front axle of the vehicle shall be fitted with tyres of appropriate dimensions for the axle load and planed down to a minimum tread depth so as to minimize the influence of tyre-road noise while maintaining an adequate level of safety. Tyres with special fitting requirements....."

Paragraph 2.5.3., amend to read:

".....index marked on the sidewall.  
For Class C1 the reference pressure is  $P_r = 250$  kPa for "standard" tyres and 290 kPa for "reinforced" tyres; the minimum test pressure shall be  $P_t = 150$  kPa."

Paragraph 3.2., amend to read:

".....level expressed in A-weighted decibels (dB(A)) shall be measured to the first decibel place as the vehicle is coasting....."

Paragraphs 4.4. and 4.5., remove all square brackets.

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