

Minutes of fourth meeting of UN ECE, GRRF ad-hoc Group on Global Harmonisation of Tyre Regulations and Tyre Grip – held in Zoetermeer, the Netherlands, 6/7/8 September 2000

The meeting was chaired by Mr Geoff Harvey of the UK Department of Environment, Transport and the Regions (DETR) with the first day devoted to discussion on Tyre Grip and the remaining two days on the draft Global Regulation on Tyres. Delegates attended from the Governments of Canada, Japan, the Netherlands, the United Kingdom and the United States of America and there were representatives of the tyre and vehicle industries of Europe, Japan and the United States of America. A list of delegates and addresses is given at the end of this report.

The Chairman thanked the representatives from RDW for acting as hosts for the meeting and thanked all delegates for their continuing interest in, and work on, the topics concerned.

Tyre Grip – Wednesday 6 September

1 The following documents were introduced for the meeting:

TH 15 Minutes of the third meeting held in Tokyo

TH 16 Issue 3 of draft Regulation (GTR)

TG 15 Submission by Japan on necessary work for the development of a tyre grip proposal.

2 The present situation regarding the draft European Union (EU) Directive on tyre noise was outlined together with details of the amendments from the European Parliament (EP) one of which, if accepted, would reduce the noise limit values by some 2dB(A). This would add further impetus to developing procedures and performance requirements for grip and another of the EP proposed amendments had actually stated a positive date of October 2003 for the introduction of grip requirements plus requirements for rolling resistance for tyres. Although it was known that ISO procedures existed for the measurement of rolling resistance using a drum method, there was not any knowledge of any widespread work on evaluation of current rolling resistance levels over a wide range of tyres.

3 It was confirmed that the work of the ISO Group, ISO TC31/SC3/WG18, concerned only grip for passenger car tyres and that, at present, the method of testing using a vehicle was well advanced but details of the trailer method were not yet available. Various slides were presented which outlined the current state of the vehicle based test, which is:

- it would be a comparison method using a control tyre cross referenced to the reference tyre (SRTT)
- track surface would be measured using the British Pendulum Number method with a number of 55 ± 15 being specified
- surface sand patch depth to be $0,7 \pm 0,3$ mm
- surface SRT value 46/65
- water depth 0,5mm to 1,5mm
- water spray system and pattern yet to be decided
- variation in result site to site less than 5%
- vehicle, four channel ABS automatic transmission
- front tyre load 60/90% of load index, pressure to be determined by ISO
- track surface temperature $20^{\circ}\text{C} \pm 15^{\circ}\text{C}$ with maximum 10% variation during test
- average deceleration to be measured during a maximum effort brake application, that is with ABS operating, from 80km/h to 25 ± 15 km/h
- the control tyre would be tested three times with two tests of the candidate tyre immediately following each control tyre test
- three control tyre sizes were under consideration, 165/70 R14, 195/65 R14 and 225/60 R16 with the possibility of an alternative size, 225/45 R17.

4 The proposals addressed issues such as the choice of the batch, or run, of production control tyres and subsequent storage and identified two possible suitable cars as the Mercedes Benz 300SE and the Renault R25. Examples of equations to determine average deceleration and correction of the average over the number of test runs were given but with the experience of brake testing according to UN ECE Regulation 13 it is thought necessary to compare these with the method of determining Mean Fully Developed Deceleration (MFDD) stated in Regulation 13.

5 The performance requirements for the purposes of compliance with this Regulation is to be decided by this, GRRF, ad-hoc group.

6 Initial thoughts on the trailer test method were also outlined and these may be confirmed by May/June 2001 – it was suggested that a report from RMA may be available by 15 June 2001. The suggestions are that the method will look at the values of peak friction, again comparing the performance of a candidate tyre against a control or reference tyre (SRTT). The procedure was essentially developed by General Motors and uses a trailer in which the path of the candidate tyre is away from that of the main trailer tyres and tests are conducted at two speeds, 32 and 96 km/h on two different surfaces, Macadam and Asphaltic Concrete. Water depth is specified as 1,25mm above the highest asperity and the surface condition can be checked either by using the reference tyre or by the British Pendulum Number procedure. Reference was made to the availability of a proprietary trailer from K J Law Engineers of Michigan at around \$200 000 and of a commercially available testing service from Lopez Traction Services, Laredo, Texas at around \$480 per test.

7 Whilst it was thought that a choice of two methods, vehicle based and trailer based, may be acceptable, the results from each must show the same rank order for the tyres using the performance indicator which is eventually established.

8 Concern was expressed regarding the time scales for the outstanding items on the ISO work, bearing in mind those being imposed by the EU noise Directive. The relationship between the test surface and normal road surfaces was also questioned but reference was made to the fact that satisfactory brake testing has been carried out for many years on surfaces available, certainly to European test authorities, where the friction co-efficient was around 0,5. It is expected that these same surfaces will be used for tyre testing. In discussion of document TG 15, presented by Japan, it was pointed out that there was concern regarding the sensitivity of the surface resulting in a different rank order of tyres tested and this same criticism applied to the choice of vehicles used for the tests. The experience of Japan was not apparent in tests carried out by European industry.

9 There was a brief presentation of the work being carried out by TUV Automotive, Germany to check the performance of some 15 different tyres on five test sites throughout Europe. Final results are not expected until around February 2001 and may answer any questions regarding the use of the present brake test tracks. Industry was asked if it could complete the delivery of reference and test tyres as previously agreed and was thanked for its continuing cooperation and interest in this work.

10 It was confirmed that a draft from ISO would be welcome and the UK would amend its current proposal contained in Issue 3 of the draft GTR. The requirements for wet grip of car tyres would be incorporated as an optional annex to the GTR.

11 The group was reminded that the discussion of tyre grip applied also to truck tyres even though it had been agreed that any requirements would not be incorporated in the GTR at this stage but would be the subject of an early future amendment of the GTR. It was reported that ISO had rejected the setting up of a group to consider truck tyre grip and no one was aware of any work on the subject. Industry confirmed that it carried out comparative testing against competitor's tyres but reference truck tyres had not been developed. In the USA, the Secretary of Transportation has called for a 50% reduction in truck accidents, focussing on the role of brakes and tyres with a comparison between the stopping distance of cars and trucks from 60mph being quoted as around 110ft (34m) for cars and 250ft (76m) upwards for trucks. The USA was looking at the use of Electronic Braking Systems (EBS) and wider use of disc brakes but there would be a concentration on tyre performance with efforts to improve grip. Industry commented that the result may be a need for more tyres per vehicle.

12 Initial reactions to the idea of using the same reference tyre as that used for cars (SRTT) were that there may need to be 3 to 4 steps in control tyre size between the car and truck tyres and that the whole issue was complicated by the use of different tread patterns for steer and drive axles for example. Industry considered that the range of tyre sizes and tread patterns currently used was such that the development of a reference tyre was essential. However, the time scales may demand at least an intermediate solution and the UK will attempt to draft a proposed procedure for further discussion.

13 It was agreed that discussion would be continued at the next meeting, the date of which would be decided in conjunction with the Global Harmonisation meeting.

Global Harmonisation of Tyre Regulations – Thursday/Friday 7/8 September

1 The following documents were introduced for the meeting:

TH 15 Minutes of the third meeting held in Tokyo

TH 16 Issue 3 of draft Regulation

TH 17 Comments from RMA following the third meeting in Tokyo

TH 18 Comments from ETRTO on Issue 3 of draft Regulation

TH 19 Submission by UK for further amendments to Issue 3 of draft Regulation

TH 20 Comments from USA on Issue 3 of draft Regulation

TH 21 Comments from RMA Issue 3 of draft Regulation

2 In the weeks immediately prior to this meeting a major in-service problem had arisen, mainly in the USA, involving a vehicle and tyre combination and including the separation of the tyre tread from the main carcass of the tyre. The Chairman asked the USA delegate if he could outline the problem and comment on whether there was likely to be any effect on the development of the Global Technical Regulation (GTR).

3 In response, the delegate confirmed the problem and that debate was continuing. This included the Department of Transportation having to give evidence before Congress relating to the test procedures for tyres and the likely outcome was that there would be a fundamental examination of the existing Standards with a view to determining the relevance to in-service conditions of use. The USA was committed to the development of Global Regulations but thought that they should represent a step forward rather than being drawn from current world wide regulations even though these may be seen as being present best practices.

4 There was subsequent lengthy discussion of the issue and the likely effects and any changes to test procedures will have to be carefully considered, depending on whether this particular problem is related to tyre design or to manufacturing difficulties. To date this did not seem to have been established. The European experience was that the accelerated high speed tests, although of short duration, were more arduous than at first sight due to the artificial distortion of the tyre contact patch against a relatively small diameter drum compared to the normal condition of running on a flat road surface. The Conformity of Production aspect of the third party type approval system was considered to be satisfactory for determining problems occurring during manufacture. Aspects of the GTR such as standardised tyre load and speed capability marking were considered to be worthwhile and there had already been considerable discussion of the importance of the use of correct tyre pressures for any particular vehicle and tyre combination under varying conditions of load and speed. The validity of requirements presently incorporated in the GTR, concerning tyre installation issues had also been discussed, including the provision of pressure monitoring systems in conjunction with tyres designed to be able to operate for short periods following a puncture - run flat designs.

5 It was agreed that the situation would be reported to the November meeting of WP.29 to confirm or otherwise amend the mandate of this ad-hoc group to continue with the development of a GTR but in the meantime the group itself considered that it could assist the current debate in the USA by continuing discussion. It was therefore decided to work through Issue 3 of the draft GTR as presented in document TH 16.

6 Following the decision taken at the third meeting in Japan to concentrate at this stage on tyres designed **primarily** for use on passenger carrying vehicles with up to eight seats plus the driver, Issue 3 of the draft had been set out to include an Introduction outlining the intention of the Regulation and the possible future development regarding the inclusion of tyres suitable for other categories of vehicle.

7 Generally it was agreed that the Introduction was a satisfactory approach but there was concern that there was still likely to be a problem in addressing the tyre suitability issue. The principle of harmonised marking of the tyre with a service description comprising a load/speed combination was sound and some variation of the stated load against speed may be allowed if this was controlled within the Regulation rather than being a decision taken by an individual vehicle manufacturer. It was suggested that the second paragraph of the Introduction be amended to allow variation of requirements such as marking to suit local markets or conditions but these seems to be against the spirit and purpose of harmonisation.

8 Regarding "Scope" it was agreed that the date of 1975 was acceptable and that, because of the possible confusion in some areas of the world the word "highway" would be replaced with "road". The question of applying the Regulation only to tyres above a specified speed capability, suggested as being "E" rated (80km/h), was also discussed but it was pointed out that there is a growing demand for lower speed vehicles and that the Regulation should apply across the range. However, in practical terms it is unlikely that a road-going vehicle would have a speed capability of less than 45km/h so this may be used as the lower limit or there may be a controlled trade off with load on a higher speed rated tyre for these applications. It was agreed to add "as applicable" following "Treadwear indicators" in the third paragraph.

9 In the Section dealing with "Definitions", the question of appropriate marking of the tyre to indicate its category of **prime** use was discussed at some length. Essentially it was agreed that the choice of tyre for any particular application was for the vehicle manufacturer, which would choose a tyre which had been tested to a particular schedule to suit the service conditions of the vehicle. However, it was also argued that the identification of a tyre for a particular application should be immediately apparent to the consumer and the fact that tyres intended **primarily** for use on trucks always have a dual load index marking is probably not sufficiently transparent for consumer identification. Whatever identification is eventually decided upon, there may be a need for consumer/enforcement authorities education. The question of identification will be revisited, maybe using the Certification Mark.

10 It was agreed to consider further the various definitions concerning Temporary Use Spare tyres or units and the relevant marking requirements, which will also have an impact on the Annex dealing with the use of tyres on vehicles. It was also agreed to reconsider the definitions of a "pneumatic tyre" and a "snow tyre".

11 The following amendments were agreed to the referenced paragraphs under "Definitions":

3.1.12 - amend to use the wording suggested in TH 18 and incorporate the present text of 3.1.12.1, .2 and .3 in the section dealing with "Marking".

3.1.13 - reconsider paragraphs under this number in line with suggestions in TH 18.

3.1.14 - add "for example" at the end of sentence.

3.1.14.5 - TH 18 suggested that this paragraph is added but the use of M/C as a suffix may be confusing if the same identification is used eventually as a general prefix for "motorcycle" tyres. This should be discussed again.

3.1.16.1, .2 and .3 – not relevant to Regulation, "Rim Offset" is sufficient.

3.1.17 to 3.1.22 - to be placed in [] for further discussion.

3.2.7 - delete but bear in mind reason for this term when discussing position of tyre markings.

3.2.8 - delete "or ground".

3.2.9 - delete "to allow ---- of use".

3.3.2 - use wording in TH 20.

3.3.6 and 3.3.7 - place in [] for further discussion relative to the rims specified in publications referred to in Annex 1, section 3.

Appendix 1 - it was suggested that the note should be deleted but the present identification of the capabilities of "Z" tyres is not transparent. TH 19 suggests an alternative form and delegates were asked to reconsider this issue.

12 In discussing Annex 1, the USA delegate agreed that they could accept the current Manufacturer Registration system being administered by the UN ECE with a suitable transition period but pointed out that the two digit reference was almost finished and that consideration should be given to the introduction of a three digit reference.

13 There were objections to the Regulation confining newly introduced tyres to be metric sizes and to the time scales involved in the information on future developments being available in ISO publications. A more flexible approach to facilitate control of new -developments such as PAX system should be sought.

14 Amend paragraph 3.1.1.1.2 to replace "ABPA" with "ALAPA".

15 Add new paragraph 3.1.1.2.1.5 in line with text in TH18.

16 Use ISO term "D_r" in place of "D_{rim}" in paragraph 3.1.1.2.2.

17 On page 25 it was agreed that all items beginning "4." should read "3."

18 Although several items covered so far had been agreed to be reconsidered, it was suggested and accepted that discussion at the next meeting would begin at paragraph 3.1.2 of Annex 1 in order to make some progress through the complete draft.

19 It was agreed that the next meeting should be held in London in January/February 2001 but subsequently this was amended to 4/5/6 December 2000 because of the anticipated commitments of several delegates.

GRRF Ad-hoc meeting - Global Harmonisation of Tyre Regulations and Tyre Grip

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