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**Economic Commission for Europe****Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****158<sup>th</sup> session**

Geneva, 13–16 November 2012

Item 16.10 of the provisional agenda

**Progress on the development of new global technical regulations (gtrs) and of amendments to established global technical regulations (gtrs) – Draft gtr on Quiet Road Transport Vehicles****Authorization to develop a gtr on Quiet Road Transport Vehicles****Submitted by the representative of the United States of America\***

This document contains a proposal to develop a new gtr on Quiet Road Transport Vehicles (QRTV). It is based on ECE/TRANS/WP.29/2012/60 adopted at the 157<sup>th</sup> session of the World Forum WP.29 (ECE/TRANS/WP.29/1097, para. 99). It is distributed to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Executive Committee of the 1998 Agreement (AC.3) for consideration. In accordance with the provisions of paras. 6.3.4.2., 6.3.7. and 6.4. of the 1998 Agreement, this document shall be appended to the gtr once adopted

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\* In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106 and ECE/TRANS/2010/8, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

## I. Background

1. At the 155<sup>th</sup> session of WP.29, the representative of the United States of America introduced a proposal to develop a gtr on quiet road transport vehicles (WP.29-155-42) and indicated that his country and Japan had volunteered to be the technical sponsors, with the United States of America chairing the informal working group under Working Party on Noise (GRB). He indicated that the European Union (EU) has been invited to co-sponsor the gtr. He proposed to update the proposal before submitting it for consideration at the March 2012 session of the Executive Committee of the 1998 Agreement (AC.3). The proposal, which would cover the presence, location, direction and operation of vehicles for visually impaired road users, received general support. The Chair of GRB stated that GRB expertise did cover all the above-mentioned matters with the exception of safety related matters. The representative of the United States of America suggested that the group of GRB experts could be completed by adding safety experts from the Working Parties on Brakes and Running Gear (GRRF), General Safety provisions (GRSG) and Passive Safety (GRSP), if necessary. AC.3 agreed to inform the experts of these Working Parties about the development of the gtr, inviting them to participate at its sessions.

## II. Terms of Reference of the Informal Working Group

2. The original Informal Working Group (IWG) on Quiet Road Transport Vehicles (QRTV) concluded its mandate at the February 2012 session of the GRB. The final report on its activities was presented to the WP.29 during its March or June 2012 session. The analysis and conclusions described in the report were considered, further built upon and implemented by the new IWG as it embarked on the gtr development phase of its work.

3. The following Terms of Reference describe the principle tasks of the new IWG as it turns its focus to the development of a gtr for quiet road transport vehicles consistent with the new WP.29/AC.3 mandate (as outlined above in Part I).

4. The IWG for QRTV shall:

- (a) Continue to identify, review and assess the status of various researches being carried out by various governments, universities and non-governmental organizations on audible warning and signalling technologies for quiet vehicles.
- (b) Invite, consult with and consider the input of safety experts from GRSP, GRRF, and GRSG.
- (c) Provide a status report to the GRB by September 2012.
- (d) Determine potential audible sound characteristics and mechanisms that convey desired vehicle performance information to the human receiver.
- (e) Develop harmonized test procedures for evaluating the conformity of potential audible sound characteristics and mechanisms.
- (f) Provide a status report to the GRB by September 2013 and to WP.29/AC.3 by November 2013.
- (g) Determine the costs and benefits associated with a QRTV gtr including potential adverse impact on the public at large or existing vehicle noise emission standards and regulations. Note that the analysis is not intended to address specific countries or regions, but rather general considerations each Contracting Party (to WP.29) should consider when implementing the potential gtr.

- (h) Provide a status report to the GRB by September 2014.
- (i) Provide a draft gtr on QRTV to the GRB by September 2014 and to the WP.29/AC.3 by November 2014.

### **III. Rules of Procedure**

- 5. The Informal Working Group is open to all participants of WP.29 and its subsidiary GRs. A need to limit the number of participants from any organization is not expected, although this will be kept under review.
- 6. The official language of the IWG shall be English.
- 7. A Chair (Mr. Ezana Wondimneh - United States of America), and Vice-Chair (Japan) and Secretary (European Commission) shall govern and guide the work of the IWG.
- 8. The secretary shall be appointed by the IWG (by consensus) and will be responsible for recording the minutes and preparing the draft report for each meeting of the IWG. In addition the secretary shall be responsible for receiving and distributing all documents (such as proposals and presentations) to the IWG according to the deadlines described below.
- 9. All documents and/or proposals shall be submitted to the Secretary of the group in MS Word format at least two weeks in advance of the meeting. At the discretion of the Chair, the group may not discuss any item or proposal which has not been circulated ten working days in advance of the relevant meeting start date.
- 10. A draft agenda and related documents shall be circulated to all members of the IWG five days in advance of all scheduled meetings.
- 11. The conclusions of the IWG group shall be based on a majority vote of governmental (members of the WP.29/AC.3) attendees.
- 12. If the IWG cannot reach common agreement on particular items or proposals, the Chair shall present the issue to the GRB and/or the WP.29/AC.3 for resolution.

### **IV. Proposal to develop a global technical regulation concerning quiet vehicles**

- 13. Technical Sponsors: United States of America (Chair), Japan (Vice-Chair) and the European Commission (Secretary).

#### **A. Objective of the Proposal**

- 14. The objective of this proposal is to develop harmonized pedestrian alert sound requirements for electric and hybrid-electric vehicles (gtr) under the 1998 Global Agreement. The work on the gtr will provide an opportunity to consider international safety concerns and leverage expertise and research from around the world.
- 15. The United States of America is currently in the process of developing a regulation to address the safety concerns surrounding electric and hybrid-electric vehicles following the enactment of the Pedestrian Safety Enhancement Act, which requires the National Highway Traffic Safety Administration (NHTSA) to conduct a rulemaking to establish a Federal Motor Vehicle Safety Standard (FMVSS) requiring an alert sound for pedestrians to be emitted by all types of electric and electric-hybrid vehicles.

16. In 2009, the NHTSA published a report on the incidence rates of crashes involving hybrid-electric vehicles and pedestrians under different scenarios. The United States of America study, using crash data collected from several states, compared vehicle to pedestrian crash rates for hybrid-electric vehicles and vehicles with internal combustion engine (ICE). The study found that there is an increased rate of pedestrian crashes for hybrid-electric vehicles versus similarly sized ICE vehicles. In 2010, the United States of America published a second report on a study that found that the overall sound levels for the hybrid-electric vehicles tested were lower at low speeds than for the ICE vehicles tested.

17. The Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT), after studying the feasibility of alert sounds for electric and hybrid-electric vehicles, issued guidelines for pedestrian alert sounds in 2010. MLIT concluded that pedestrian alert sounds should be required only on hybrid-electric vehicles that can run exclusively on an electric motor, electric vehicles and fuel-cell vehicles. MLIT guidelines recommend that electric and hybrid-electric vehicles generate a pedestrian alert sound whenever the vehicle is moving forward at any speed less than 20 km/h and when the vehicle is operating in reverse. MLIT guidelines do not recommend vehicles to produce an alert sound when the vehicle is operating, but stopped, such as in heavy traffic. Also, the manufacturer is allowed to equip the vehicle with a switch to deactivate the alert sound temporarily.

18. The UN World Forum for the Harmonization of Vehicle Regulations (WP.29) also determined that vehicles propelled in whole or in part by electric means, presents a danger to pedestrians and directed its subsidiary Group of Experts on Noise (the GRB) to develop possible solutions based on acoustic measures. During its March 2011 session, WP.29 adopted guidelines covering alert sounds for electric and hybrid vehicles that are closely based on the Japanese guidelines. The guidelines were published as an annex to the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3). The guidelines developed by the UNECE recommend that electric and hybrid-electric vehicles emit pedestrian alert sounds beginning when the vehicle starts moving and continuing until the speed of the vehicle reaches 20 km/h. The guidelines do not specify that a vehicle emit an alert sound when the vehicle is stopped or when the ICE of a hybrid-electric vehicles is engaged and thus emitting sound. The guidelines were developed by GRB.

## **B. Description of the proposed regulation**

19. The gtr will specify sound emission requirements for electric and hybrid-electric vehicles that would activate in certain vehicle operating conditions to aid visually-impaired and other vulnerable pedestrians in detecting the presence, direction, location and operation of those vehicles. We expect that these requirements, if mandated, by the Contracting Parties would improve the safety of pedestrian.

20. The scope of the regulation (its application) will initially cover electric and hybrid-electric vehicles. In a second phase of work, the IWG will work to amend the gtr to cover all quiet vehicles regardless of their propulsion system (e.g. conventional ICE powered vehicles).

21. The GRB existing Informal Working Group on Quiet Road Transport Vehicles (QRTV) is envisioned as the appropriate group of experts that, upon conclusion of their original mandate (in February 2012), would turn its full attention to the development of the gtr. The expected establishment date for the new gtr is November 2014.

### C. Existing regulations and directives

22. Because this is a new area of concern, there are no known regulations to reference at this time. However the following standards, research reports and guidelines documents will be considered during development of the new gtr. In addition, other materials may coming to the attention of WP.29 will also be considered.

- (a) Research on Quieter Cars and the Safety of Blind Pedestrians, A Report to Congress, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C., October 2009.
  - (b) Quieter Cars and the Safety of Blind Pedestrians: Phase I, John A. Volpe National Transportation Systems Center, DOT HS 811 304, April 2010.
  - (c) Guideline on measures against the quietness of hybrid vehicles, etc., Japan, September 2010.
  - (d) The United States Pedestrian Safety Enhancement Act of 2010.
  - (e) World Forum for Harmonization of Vehicle Regulation of the United Nations Economic Commission for Europe (UNECE) guidelines covering alert sounds for electric and hybrid-electric vehicles as annexed to the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3) (ECE/TRANS/WP.29/78/Rev.2, Annex 2).
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