

QUIET ROAD TRANSPORT VEHICLE

Chairman's Report

To

54th Session of the GRB

This report presents the activities of the QRTV Informal Work Group that have taken place since the 53rd Session of the GRB.

- **15 May 2011 – 6th QRTV meeting San Diego, California, USA:**
 1. **Received additional presentations from researchers in Germany and Denmark regarding factors that influence acoustic signal detection in diverse noise environments (papers are on QRTV website)**
 2. **Received further information from Dr. Katsuya Yamauchi, Professor, Nagasaki University, regarding the absence of cultural differences with regard to human response to various audible signals (presentation on QRTV website)**
 3. **Received information regarding electric motorcycles:**
 - **The U.S. Motorcycle Industry Council (MIC) made a presentation expressing reasons why alerting devices are not necessary for motorcycles,**
 - **The U.S. manufacturer of quiet electric motorcycles, XERO Motor Cycles, made a presentation, including a video demonstration that showed electric motorcycles do produce low level noise from their electric motors and chain drives. They pointed out that since the electric motor requires vents for cooling, the vents can be tuned to produce a wide variety of sounds, including the sound of a siren.**

- **XERO Motorcycles offered to provide U.S. DOT – NHTSA a vehicle for testing – no information if NHTSA accepted offer.**
- **SWOV article presented at this meeting as GRB-54-07, points up new quiet vehicle issue regarding electric scooters.**
- 4. Received limited information regarding U.S. NHTSA research. Presentation discussed test subject reaction to various vehicle pass-by's – information contained in 2nd progress report. They were unable to present information specific to audible alerting signal designs (frequency content, modulation, frequency shifting and sound level) and human subject reaction.**
- 5. Introduced Chairman's rough-draft template of a GTR with primary discussions centered on necessary technical content including discussions of what is a quiet car, intent of the GTR, definitions of various vehicles, applicability of regulation etc.. The chairman assigned tasks to be completed by the 7th QRTV meeting in Osaka, Japan .**
- **31 August 2011 – 7th QRTV meeting Osaka, Japan:**
 - 1. Reviewed revised Chairman's rough-draft template of a GTR. Primary discussions centered on:**
 - **vehicle applicability of the GTR,**
 - **definitions of electric and hybrid vehicles**
 - **definitions of technical terms used in GTR (frequency spectrum, sound amplitude, frequency shifting, etc.). A bit of repetition is good for the soul,**
 - **Presentation of the SAE-ISO low sound vehicle test procedure**

- 2. The discussions highlighted the many technical issues that require resolution, particularly in light of on-going regulation development activities in the U.S.**
 - 3. The U.S. DOT-NHTSA was present but unable to provide information with regard to specific technical issues, definition of key technical terms and U.S. regulatory applicability.**
 - 4. Received presentation from Brüel & Kjaer regarding their Pulse Exterior Sound Simulator for evaluation alerting sounds on various vehicles and under various environmental noise conditions.**
 - 5. Received preliminary report of research at the Federal Highway Research Institute (BASt), Germany conducted August, 2011, entitled Sound Emissions from Pass-By Tests – Tests with Standard and No Noise Electric Passenger Cars and Blind Probands. Preliminary conclusions were in line with technical direction of QRTV activity. They included recommendations for:**
 - a synthetic fading sound, limited from 0 20 or 30 km per hour which cannot be switched off**
 - desired sound with increasing frequency with vehicle acceleration**
 - small range of differing sounds to improve finding of different car positions**
 - sound design of cars of different makes or manufacturers should be limited**
- 18 October 2011 – 8th QRTV meeting Baltimore, Maryland, USA:**

Provisional Agenda
8th Meeting of the Quiet Road Transport Vehicle Work Group
18 thru 20 October 2011
Baltimore, Maryland, USA

18 October- 10:00 a.m. to 5:30 p.m.

- 1. Welcome and Opening remarks**
 - QRTV Chairman
 - Host Organization: (TBD) National Federation of the Blind
- 2. Introduction of Participants and Logistic Information**
- 3. Agenda**
 - a) Modifications / Additions
 - b) Adoption
- 4. Minuets from 7th Meeting in Osaka, Japan**
 - a) Modifications / Additions
 - b) Adoption
- 5. Report of Activities**
 - a) Report by GRB Chairman Christian Theis of relevant information from September 2011 meeting
 - b) Status report U.S. NHTSA regarding regulation development and the 12 July 2011, NHTSA Notice of Intent to Prepare an Environmental Assessment for Pedestrian Safety Enhancement Act of 2010 Rulemaking
 - c) Status report on U.K. study of quiet car related accidents
 - d) Status report on activities in Japan
 - e) Status report on activities in Germany
 - f) Status of U.S. proposal to sponsor the GTR
 - g) Report by QRTV Chairman of special meeting at Inter Noise 2011 to hear presentations by the following conference presenters regarding quiet cars:
 - Mr. Norio Kubo, President, Yokohama Institute of Acoustics, Inc., discussing development of various audible sound designs,
 - Dr. Klaus Genuit, President, Head Acoustics GmbH, discussing audible signal characteristics in low signal to environmental noise conditions,

- **Dr. Koji Nagahata, Associate Professor, Fukushima University, discussing the quiet vehicle impact on the soundscape**
- **Mr. Toshiyuki Tabata, Advanced Vehicle Performance Group, Nissan Motor Company, Ltd, discussing basis for selecting two primary frequency bands for audible signal detection in various environments**
- **Dr. Katsuya Yamauchi, Professor, Nagasaki University, discussing cultural differences with regard to various audible signals**

7. Presentations:

a) **Further discussion by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA), Volpe Laboratories, of their Phase 2 report and the application of results to regulation development.**

b) **To be determined**

c) **Recap of Osaka meeting by QRTV Chairman
6:30 p.m. Group Dinner at waterfront restaurant (optional)
19 October - 9:30 a.m. to 5:30 p.m.**

**8. Development of a Draft Global Technical Regulation (GTR).
(Attachment A - GTR template to be provided prior to Baltimore meeting)**

(Receive inputs from experts as assigned at the Osaka meeting)

a) **Revise Scope and Introduction language per Osaka discussions**

b) **Applicability - Need to resolve applicability wording issue**

c) **Definitions - Need to provide clear definitions of vehicles subject to this GTR, environmental terms, vehicle operation, other terms used in GTR**

- d) General Requirements - Need to define alerting system requirements with regard to pedestrian safety and environmental masking**
 - e) Alerting Signal Characteristics - Need to specify acoustic signal form, time related functions and other key acoustic parameters**
 - f) Performance Requirements - Need to specify acoustic performance in terms of sound pressure level, directionality, locatability, operation on-time, and other key performance requirements of alerting system**
 - g) Test Conditions - Need to specify environmental test environment that are not defined in the ISO quiet vehicle test procedure such as use of test subjects, vehicle selection, etc.**
 - h) Test Procedures - Need to incorporate by reference the ISO quiet vehicle test procedure to establish baseline vehicle sound levels (with regard to vehicle operation, alerting system operation, environmental conditions, acoustic influences, other)**
 - i) Conformance Test Procedure - Need to define test procedure that will be used by government authorities to determine compliance with GTR**
 - j) Alignment of Technical Terms - Need to review definitions, performance requirements, testing protocols and other key technical requirements with those established by signatories to the 1958 and 1998 Agreements**
 - k) Other considerations (See Attachment B)**
- 6:00 p.m. NFB reception and President hosted dinner for participants**
- 20 October - 9:30 a.m. to 5:30 p.m.**
- 9. Continuation of GTR development**
 - 10. Collaboration / Harmonization of U.S. Pedestrian Safety Regulation with UN/ECE/GTR for Quiet Road Transport Vehicles (QRTV). (see Attachment C)**
 - 11. Discussion and assignment of key GTR requirements**

Transmitted by Chair of Quiet Road Transport Vehicle
(QRTV) Informal Working Group

Informal document **GRB-54-18**
(54th GRB, 19-21 September 2011,
agenda item 10)

- a) **Economic / cost analysis**
- b) **Public benefit analysis**
- c) **Environmental impact analysis**
- d) **Other considerations**