

Report

4th MEETING

WORKGROUP ON QUIET ROAD TRANSPORT VEHICLES

27, 28 and 29 September 2010

VDA Office in Berlin, Germany

**27 September – 1:30 p.m. to 6:00 p.m.**

- Welcome and Opening remarks by Chairman

- Opening Remarks by German Host

- Introduction of Participants:

New participants:

Mr. Hyun-Woo Lee (Korea),

Prof. Katsuya Yamauchi (University of Munich , Nagasaki University),

Mr. Seiniger (German Federal Highway Research Institute),

Mr. Falk (UK Dept. of Transportation),

Mr. Klopotek (Scania),

Mr. Wondimneh (U.S. NHTSA),

Mr. Schroder (NFB)

Mr. Hanson-Abbott (Brigades Electronics)

Mr. Morgan (Brigades Electronics)

Prof. Dr. Leventhall (Brigades Electronics)

Government's representatives:

Mr. Theis (Germany, Chairman of GRB),

Mr. Schneider (European Commission),

Mr. Ficheux (France)

QRTV Chairman: Mr. Feith (U.S.)

Mr. Falk (UK)

Mr. Korenori (Japan)

OICA and other industry representatives:

Mr. Gerhard (Porsche, OICA)

ISO / SAE representative: Mr. Moore (GM)

Secretary: Mr. Guichard (Daimler, OICA)

Maria Backlund (Volvo),

Yoshihiro Shirahashi (Nissan)

Florence Berthet (Renault)  
Mr. Ohno (JASIC)  
Ms. Leveratto (OICA)  
Mr. Sawada (JAMA)  
Mr. Sakamoto (JAMA)  
Mr. Kubota (JASIC)  
Mr. Bratfisch (JAMA)  
and Mr. Seiler (VDA)

- Adoption of Agenda

The Chair announced that the agenda is kept open for input and presentation.

- Approval of Minutes from 3<sup>rd</sup> Meeting in Tokyo

- General Review of September GRB meeting

- Review Work Plan for this 4<sup>th</sup> Meeting

The chairman invited the secretary of the group to sum up the work done by the group since Feb, 2010. He invited the group to think outside the box and come up with creative ideas. He addressed the matter of the type of sound. The NFB stated at this stage that they prefer the AVAS to mimic the sound of an ICE.

GM presented on behalf of Dr. Wall-Emerson the outcome of researches done by Western Michigan University, Blindness and Low Vision Studies Yuma Research. Please see document IG-QRTV-04-02

Description of experiment designed to determine the effect of acoustic cues on the ability of blind and low vision pedestrians to perform typical daily navigational tasks (Orientation and Mobility). Experiment structured from the perspective of the pedestrian.

Initial observations:

1. Some sounds improved performance over both a vehicle in EV mode as well as internal combustion vehicles, at the same dB level as the ICE vehicle.
2. Which sound performs best depends on whether detection or decision-making is required

- DETECTION: When do I hear a vehicle coming?

- DECISION MAKING: When I am at an intersection, is the car I detect going straight or crossing right in front of me? When I am at an uncontrolled intersection, do I have enough time to cross the street?

3. Although important, detection is not a sufficient metric for judging sound appropriateness.
4. Testing done under well-controlled, low ambient sound conditions → further testing needed under high ambient and “live” traffic conditions

NFB asked if synthetic sound could be more efficient than sound mimicking an ICE sound.

- Yes

NHTSA asked for details concerning the sound description

- GM said: the sounds tested had some pitch shifting, there were broadband sounds, some of them were tonal, some were warning signals, some were ICE-sounds

UK asked details concerning the noise levels

- GM stated: the levels were about the same as the level of equivalent ICE vehicles

The Chairman asked Japan to introduce again the Japanese Guideline. Japan referred to the document GRB-52-03

NHTSA asked Japan the reasons for having a turn-off “switch”.

- Japan: referred NHTSA to document QRTV-04-09

NHTSA stated that they believe “off” switch reduces the safety warranty and can't support it.

The European Commission asked if NHTSA has evidence that a switch is not needed / necessary.

- NHTSA replied they don't.

NHTSA stated: the Japanese Guideline speaks to what is not desired. However, a regulation should specify what is permitted/required. NHTSA asked other regulators if this guideline could be acceptable for a regulation.

NFB referred to the World Blind Union (WBU) letter (QRTV-04-03) and said, Blinds use the sound of idling vehicles to make street crossing decisions.

Germany regretted that the WBU criticized the work of the IG QRTV without providing solutions. Germany stated the need to address the safety matter quickly and therefore of bringing something into force quickly. Regulators cannot both conduct extensive research and conclude quickly on a guideline.

UK asked if alternative technologies like pedestrian detection could be used instead of AVAS. Is sound based system necessary? So far, no cost-benefit analysis shows that.  
- Chairman: the group is so far looking only at guidance and not at a regulation.

Volvo stated that their pedestrian system is working. It detects almost everyone, even children of an average size and about 8 years of age.

Japan concluded that the Japanese Guideline is not a final paper yet. It will be updated and discussed, for example concerning the pause switch and the idling situation. The opinion of pedestrian and driver will be asked. Today, if fitted, an AVAS should meet the Japanese Guideline.

NHTSA stated: "if fitted" requirements do not exist in the USA.

The Chairman reviewed the WBU letter (see document QRTV-04-03) and pointed out their conclusion that sound is needed in vehicle idle phases.

EU-Com stated: they don't support this idle sound idea and are opposed to quick conclusions concerning the noise in vehicle idling phases.

SAE reported about the current activities. SAE will work on the "pitch shifting"

CLEPA asked if the acoustic (sound) measures could be expressed in Phone's.

Chairman stated: Decibels, as used in sound pressure level measurements, already present a level of complexity for many persons to understand. Introducing the Phone as the unit of loudness would not have meaning to most persons, including many in the field of acoustics.

### **28 September – 9:30 a.m. to 5:30 p.m.**

NHTSA reported to the group about the phase 2 activities in the USA and promised to report more in detail to the group at next meeting.

The conclusions of the Phase 2 are expected by December 2010.

ISO reported about the request of U.S. VOLPE for sound measurements of a range of vehicles and a description of the measurement procedure. VOLPE won't discuss / release measurement data provided by OEMs. CLEPA presented a desk demonstration. Please see document QRTV-04-06

Presentation by Prof. Dr. Yamauchi (please See document QRTV-04-05). The long term goal is to hear the quiet vehicles while maintaining a quiet environment, so called "Hi-Fi

soundscape". The relationship between subjective human reaction and the acoustic properties of sound cues has been studied. The minimum and comfortable detection levels of 6 cues in different simulated noise environments have been studied with the conclusion that it is hard to balance the sound level for safety and a desire for a quiet sound environment.

BASt reported about a research project in German. (Please see document QRTV-04-07)

UK reported on the activities underway in the UK by TRL looking at UK accident statistics. The report will be published by the end of October 2010. The conclusions of TRL are similar to the Conclusion of the NHTSA in its phase 1 report concerning the increase of risk due to HEV. In urban environment, the risk is 1.3 times higher than that of ICE. In rural areas, it's 1.4 times higher. HEV are 55% more likely to be involved in accidents and twice as likely to be involved in pedestrian accidents. There were 62 accidents in 4 years for HEV.

Renault presented the document QRTV-04.04 and explained the need of rapid results of the QRTV group for manufacturers.

CLEPA representatives from Brigade provided an audio demonstration of their "white noise" alerting system that is currently in use in the UK and several other countries as a vehicle backing alarm. They claim the white noise (broad frequency spectrum) is less offensive to third parties than pure tones and other frequency specific sounds.

The chairman requested the group to start on the draft of a working document containing guidance concerning the use of AVAS. The main issues for the NFB and the U.S. NHTSA are the pause switch to turn off the alerting system at the discretion of the driver and the automatic sound-off condition during the stationary idling phase of vehicle operation.

### **29 September – 9:30 a.m. to 5:30 p.m.**

Review of the work to be accomplished by the next meeting

ISO announced it will work on the "pitch shifting" and the "volume shifting"

Japan will check the different test protocols existing so far and will propose a harmonized test protocol that will be presented by January 2011.

Germany reminded the group that the dead line for the work is 2012.

Japan announced some activities on the "masking effect". They reported some results. (Please see the document QRTV-04-08)

BASt reminded the group that the world previously faced a similar situation in the past and reported the situation after the end of the cold war. In East Germany, people were familiar with the two stroke engine noise and didn't hear or recognized the noise of four stroke engines. After a time of adaptation, people managed to adapt. So, he recommended the group consider the hypothesis that people will learn to recognize the noise emitted by EV and HEV.

CLEPA asked NHTSA whether data are available concerning the navigation of Blinds on the streets (detection time, decision making time) NHTSA as well as ISO will look for data.

### Conclusions

Since the group didn't finish the work on the working document, the chairman proposed to work on it together with the secretary and circulate it by email. The comments are expected by the members of the group until October 25<sup>th</sup>.

### Adjourn

Next Meeting: planned for January 2001, Munich in Germany.