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Progress on the development of new global technical regulations (gtrs) and of amendments to established

global technical regulations (gtrs) — Draft gtr on Electric Vehicles

First progress report of the Informal Working Group on Electric Vehicle Safety

Submitted by the representative of the United States of America *

The text reproduced below was prepared by the representative of the United States of America. It is based on informal document WP.29-157-19, distributed at the 157th session (ECE/TRANS/WP.29/1097, paragraph 93). This document, if adopted, shall be appended to the gtr in accordance with the provisions of paras. 6.3.4.2., 6.3.7. and 6.4. of the 1998 Agreement.

* 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.

First progress report of the Informal Working Group on Electric Vehicle Safety (EVS)

I. Welcome and practical arrangements

1. Welcoming remarks:
 - (a) Christopher Bonanti, Associate Administrator for Rulemaking
 - (b) Dan Smith, Senior Associate Administrator
 - (c) Kevin Vincent, Chief Counsel

II. Informal working group organization: EVS – Leadership roles

2. The organization of the informal working group was acknowledged by EVS members:
 - (a) Chair: Nha Nguyen (National Highway Transport Safety Administration (NHTSA), United States of America (USA)).
 - (b) Co-Vice Chairs: Johan Renders (EU), Chen Chunmei (Ministry of Industry and Information Technology of the People's Republic of China (MIIT)).
 - (c) Secretary: Kazuyuki Narusawa (NTSEL, Japan).
3. Attendees included:
 - (a) Contracting Parties of the 1998 Agreement: Canada, China, France, Germany, Japan, Republic of Korea, USA (NHTSA, Environmental Protection Agency (EPA) and Department of Energy (DoE)) and European Commission (EC).
 - (b) Industry organizations: Association of global Automakers (Global automakers), Autoliv, China Automotive Technology and Research Center (CATARC), Cobasys, European Association of Automotive Suppliers (CLEPA), International Organization of Motor Vehicle Manufacturers (OICA) (Alliance ,Volvo, Daimler, BMW, BAIC Group, Chang'An NEV, General Motors, Toyota, Nissan, Honda, Ford, Renault and Volkswagen), Johnson Controls, Motors and Equipment Manufacturers Association (MEMA).

III. Approval of the agenda

4. The agenda was discussed and agreed upon.

IV. EVS mandate

5. The minutes of WP.29 March 2012 session (ECE/TRANS/WP.29/1095, para. 133) and ECE/TRANS/WP.29/2012/36 and its Corr.1 were presented:
 - (a) June 2011 – the representatives of Japan, USA (NHTSA, EPA) and EC agreed to co-sponsor the group.

(b) November 2011 – the representatives of Japan, USA and EC introduced a draft proposal to establish two informal working groups to address safety and environmental issues of EVs. NHTSA Chief Counsel gave a presentation on the NHTSA battery research plan to WP.29. The proposal received general support by the Executive Committee of the 1998 Agreement (AC.3) (ECE/TRANS/WP.29/1093, para. 141).

(c) March 2012 – AC.3 adopted ECE/TRANS/WP.29/2012/36 and its Corr.1 and welcomed the co-sponsorship of China. The representative of the United States of America offered to chair while China and European Union offered to Vice-Chair the EVS group. Japan committed itself to take over the secretarial tasks.

V. Draft terms of reference for EVS

6. The terms of reference (ToR) of the informal working group were discussed and updated upon the agreement of the informal working group. Most of the changes were incorporated to provide better clarification to the text of the ToR. Some of the relevant changes are listed below:

(a) Changed RESS (Rechargeable Energy Storage System) to REESS as RESS is already another informal working group of the Working Party on Noise (GRB).

(b) The informal working group decided to keep a broad definition of high voltage vehicles and use of EV in the ToR instead of specific types of vehicle such as Plug-in Vehicles (PEV), Hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), Hydrogen Fuel Cells Vehicles (HFCV), etc. A more specific definition could be defined in the United Nations Global Technical Regulation (gtr).

(c) Inserted a paragraph to include the WP.29 and AC.3 decision: "AC.3 has adopted this proposal with China as one of the co-sponsors together with the United States, Japan and the European Union, and recorded in the reports."

(d) Post-crash was changed to "During and post-crash."

(e) The expert from EC proposed that this informal working group should also consider the different standards for electro-mobility (vehicle inlets for charging) and for vehicle-to-grid communication (intelligent charging), in so far these topics may be relevant for the technical requirements to be developed.

(f) The informal working group agreed to exclude the noise and Electro Magnetic Compatibility (EMC) issues from the ToR.

VI. Update on ongoing and planned research and rulemaking activities

7. Some participants of the meeting provided presentations on the status of their national/regional legislation, research and testing activities on EVs. Expert from the industry also introduced their current activities and standardization efforts. The presentations are posted on the UNECE website:

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/evs_01.html

A. USA rulemaking process

8. NHTSA Chief Counsel Office, Mr. Jesse Chang, made a presentation on the rulemaking process concerning vehicle safety. The participants were well informed on the

rulemaking process in the USA in general and the gtr should also follow the same process before its establishment as USA rule.

9. The expert from Germany asked whether or not the rulemaking process could be streamlined by early participation from industry. The expert from NHTSA answered that his agency would try to involve all concerned parties from a very early stage such as the research phase. However, he explained that comments from the public could come from many different unanticipated parties. He concluded that if NHTSA would receive relevant comments, they would need to be addressed.

10. The expert from OICA (BMW) asked about the possible use of private research findings (e.g. industry), and received confirmation from the informal working group that all data, studies, and/or information were appreciated.

11. The expert from EC asked about the process of non-compliance to regulations and whether or not a manufacturer's certification might have a different result than NHTSA's compliance test. The expert from NHTSA confirmed this possibility. He explained that a dedicated office for compliance matters was provided by his agency and that the compliance was evaluated against the objective test in the regulations. In the case of inconsistent results, the compliance office will evaluate the test procedure(s) for possible amendments.

B. Safety requirement for EVs in EU

12. Mr. Johan Renders of EC made a presentation on safety requirements for EVs in EU. He explained the legal framework of EU type approval for motor vehicles and the current requirements and how the objectives to address safety of Electric Vehicles in this framework had been accommodated.

13. Referring to the future possible transposition of the gtr on EVS into the EU legal framework, he explained that the provisions of the gtr should be incorporated in a Regulation annexed to the 1958 Agreement. He further clarified that compliance with these Regulations would be required for granting type-approval in the EU.

14. The expert from NHTSA asked for clarifications on the legal differences between EU Regulations and EU Directives. The expert from EC explained that Directives provide flexibility to EU member States for their adoption into national legislations, but also entailed administrative burdens as they need to be transposed into each national legislation of the EU member States. Accordingly, he informed that EU was more in favour of using EU Regulations in its legal framework, because these were directly applicable through its member States, without the need of transposing them at a national level. He concluded that this should ensure uniform application of the requirements in the 27 EU member States.

15. The expert from OICA asked for clarification about the interaction between the General Safety Regulation and the EU Directive for the Type Approval of motor vehicles. The expert from EC explained that this was an example of the trend to move from Directives to Regulations. However, he clarified that in this case the provisions of the General Safety Regulation have to be referred into the EU Directive, which results also in some administrative burden. He finally added that in the future it is not excluded that the Regulation and the Directive would be combined into one legal instrument (most likely a EU Regulation).

C. EV status in Japan

16. Mr. Ryugo Toji of the Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT) explained and introduced the EV market situation in Japan and its governmental effort for the related regulation including the introduction of the gtr.

17. The expert from OICA asked whether Japanese manufacturers should follow Japanese national requirements or UN regulations. The expert from MLIT explained that the national requirements would be valid until the official introduction of UN regulation such as UN Regulation No. 100 in 2014. He also informed the informal working group about the intention of MLIT to harmonize current existing national requirements with the UN Regulation, once established.

D. REESS status

18. The Chair of REESS group of interested experts, Mr. Gerd Kellermann, introduced the status report of REESS (UN Regulation No. 100, 02 series of amendments).

19. The expert from the USA DoE questioned whether the definition of REESS includes other types of battery than Li-Ion battery / capacitors. Mr. Kellermann clarified that the REESS group had carefully considered many types of battery and had provided common test procedures that would be applicable for all types of battery.

E. China's standard for EV

20. The expert from China, Mr. Sun Zhendong, gave a presentation on the process and status of Chinese standards for EVs.

21. The expert from OICA questioned how the Chinese government differentiates the mandatory and voluntary standards such as the industrial ones. The expert from China clarified that MIIT would decide whether on what would be mandatory or not. He clarified that, in general, the standard that began with the "GB" meant that it would be enforced, while with "GB/T" meant recommendation. He added that "QC" was meaning industrial standards, and a voluntary requirement in general. He also stressed that QC/T standards might also become mandatory for MIIT decision. He concluded that his country was planning to revise more EV standards in the future and that all GB and GB/T standards were available on the website of the Standardization Administration of the People's Republic of China (SAC), in Chinese.

F. EV Status in Korean

22. The expert from the Republic of Korea, Mr. Hyuk Jung, introduced the status of Korean EVS regulations including the report of Korean research activities for EVs. He explained that the revised test procedures would be expected in 2012. He also informed the group that Korea's KMVSS 305 would be harmonized with FMVSS 305.

G. Battery safety research by NHTSA

23. Ms. Barbara Hennessey, expert from NHTSA's Office of Vehicle Crashworthiness Research, made a presentation on the battery safety research programme of her agency. Topics included the development of:

(a) A high level failure modes and effects analysis (FMEA) for current and near term electric vehicles and hybrids to guide the development of other safety assessment projects;

(b) Test procedures to assess battery stability under normal and abnormal use conditions;

(c) Test procedures to assess minimum control system requirements including active, passive and redundant control mechanisms, diagnostics, predictive thresholds and operator indicators and messages;

(d) Field discharge procedures for inoperative/post-crash vehicles.

24. The expert from NHTSA conveyed to the informal working group that the UN Regulation No. 100 would be considered in developing test procedures, and that the results of the FMEA should be available for discussion at the next EVS meeting in autumn 2012.

H. Joint Research Centre presentation on EV research

25. On behalf of the Joint Research Centre (JRC), the European Commission's Research Department, Mr. Johan Renders made a presentation on JRC support for EV technical research. The expert from EC also mentioned that JRC might participate at the next meeting and provide more details on EC research activities.

I. China's EV industry presentation

26. Mr. Luan Yunfei expert from the Chang'An NEV Company in China, introduced the development plan of EVs by his company. His company had sold 1.9 million vehicles in 2010 including small vans less than one ton of total weight. He stated that the company's EVs were designed and manufactured to comply with all the safety standards of China, including crash tests and other safety tests.

J. General Motors' presentation for EVS

27. Mr. Volker Rothe introduced General Motors' technological strategy, its technical research and development and position concerning EVs regulations and other standards. He also provided further detailed explanation on test procedures in his company.

K. Volkswagen's presentation

28. Mr. Heiko Mertens introduced Volkswagen's position on EVs, and/or possible other regulations. He stated that next year would be relevant for the electric Mobility plan of his company. He added that at first, the blue-e-motion would kick-off the age of electrically propelled vehicles and the Golf blue-e-motion would follow immediately. He also informed that other vehicle models would be available in 2013/2014, based on plug-in hybrid technology. He stated that the position of his company was fully in line with OICA on the EVs.

L. Ford's presentation

29. The expert Mr. Domenico Gabrielli from Ford, introduced the company's strategy to electrify vehicles including research and development activities and the company's product

plan. He also conveyed that many committees of the Society of Automotive Engineers (SAE) battery safety standards were nearing publication of the outcome of their work.

M. OICA presentation on EVS

30. On behalf of OICA Mr. Scott Schmidt, expert from Auto Alliance, stated the industry's position on EV UN regulations. He stated that the automobile industry fully supports this regulatory activity and would work to provide a preliminary proposal for consideration by the informal working group.

VII. Brainstorming on the gtr

31. The informal group had an exchange of views on the following subjects:

(a) Content, structure and scope of the gtr: The gtr will follow the formal format set forth by WP.29.

(b) Technical report: A final technical report will be submitted with the final draft gtr for adoption by WP.29 and AC.3.

(c) The expert from OICA indicated that he would provide a preliminary draft proposal for the group's consideration at the next meeting. The Chair welcomed the offer and remarked that the draft gtr should be supported by robust technical rationale and justification.

(d) Scope: The informal working group discussed the scope of the gtr and outcome of this discussion is summarized as follows:

(i) The gtr would cover EVs (electric vehicles and hybrid vehicles) of Category 1-1 and 1-2 definition included in the Special Resolution No. 1 (S.R.1) under the 1998 Agreement [and less than 10,000 lb (4536 kg)] 2 wheelers and 3 wheelers would be excluded.

(ii) More specific descriptions/features such as propulsion system, dimension, or voltage level etc. should be added.

(iii) Another option is to use scope under the HFCV gtr.

(iv) Contracting Parties maintain their current crash test procedures.

(e) The expert from Japan stated that since the time line is severely limited, it should be introduced in a step by step approach differentiated by priorities in a timely manner.

(f) The expert from Germany stated that only the vehicle and its components with high voltage (over 60 Volts Direct Current (VDC) and 30 Volts Alternative Current (VAC)) could be the scope of this informal working group.

(g) The expert from OICA stated that it should be clarified whether HFCV vehicle would be included in the scope.

(h) The expert from Germany proposed to consider those requirements of the HFCV gtr, as appropriate, covering the scope of the draft gtr on EVS.

(i) The secretariat stated that the discussion on HFCV gtr had not covered all electric requirements such as battery safety.

(j) The chair and co-sponsors would prepare a proposal on the gtr outline for consideration at the next EVS meeting.

(k) Road map for deliverables for gtr: the expert from EC proposed to begin the discussion on establishing a road map after the next meeting.

(l) Coordination with Electric Vehicle Environment informal working group (EVE): US/EPA kindly informed that the schedule of first EVE meeting would be held on 8 June, 2012, immediately after the next session of the Working Party on Pollution and Energy (GRPE) and the second meeting would be held on 13 September at the Environment Friendly Vehicle exhibition in Baltimore, Maryland, USA.

VIII. Any other business

32. None.

IX. Actions items and future meetings

33. The informal group agreed on the following actions:

(a) The Chair provided a progress report and its TOR to the Working Party on Passive Safety (GRSP) at its May 2012 session.

(b) Co-sponsors would prepare the outline of gtr by the next meeting of EVS and circulate it to facilitate discussion at the next meeting (by early September 2012)

(c) The expert from OICA would prepare the first preliminary draft text proposal before the next meeting and circulate it to facilitate discussion at the next meeting (by early September 2012).

(d) Distribute the meeting report and action item list which explains the remaining tasks, open issues, and/or responsive person etc, and attendance list as annex.

(e) Next EVS meeting was scheduled on 23-25 October, 2012 in Bonn, Germany.

(f) The 3rd EVS meeting would be held in Tokyo, Japan, either in February or March, 2013.