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## Economic Commission for Europe

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### World Forum for Harmonization of Vehicle Regulations

### Working Party on Passive Safety

**Fifty-second session**
Geneva, 11–14 December 2012

# Report of the Working Party on Passive Safety on its fifty-second session

Contents

Annexes

# I. Attendance

1. The Working Party on Passive Safety (GRSP) held its fifty-second session in Geneva from 11 to 14 December 2012, chaired by Ms. M. Versailles (United States of America). Experts from the following countries participated in the work following Rule 1(a) of the Rules of Procedure of the World Forum for Harmonization of Vehicle Regulations (WP.29) (TRANS/WP.29/690 and Amend.1): Australia; Belgium; Canada; China; France; Germany; Hungary; India; Italy; Japan; Netherlands; Norway; Poland; Republic of Korea; Russian Federation; South Africa; Spain; Sweden; Switzerland; Turkey; United Kingdom of Great Britain and Northern Ireland and United States of America. An expert from the European Commission (EC) participated. Experts from the following non-governmental organizations participated: Consumers International (CI); European Association of Automotive Suppliers (CLEPA); Foundation for the Automobile and Society (FIA Foundation); International Organization of Motor Vehicle Manufacturers (OICA) and International Motorcycle Manufacturers Association (IMMA). Upon the special invitation of the Secretariat an expert from the University of Sao Paulo also participated.

2. The informal documents distributed during the session are listed in Annex I to this report.

# II. Adoption of the agenda (agenda item 1)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/1 and Add.1
Informal document GRSP-52-03

3. GRSP considered and adopted the agenda (ECE/TRANS/WP.29/GRSP/2012/1 and Add.1) proposed for the fifty-second session with the new agenda items 22(h), 24 and 25 as well as the running order (GRSP-52-03). The list of GRSP informal working groups is contained in Annex VIII to this report.

# III. Global technical regulation No. 1 (Door locks and door retention components) (agenda item 2)

4. No new information was provided for this agenda item and GRSP agreed to delete this item from the agenda of its further sessions, unless new proposals would be available.

# IV. Global technical regulation No. 7 (Head restraints) (agenda item 3)

*Documentation*: ECE/TRANS/WP.29/2012/124,
Informal documents WP.29-158-19, GRSP-52-18 and GRSP-52-23

5. The expert from the United Kingdom, Chair of the informal working group on UN GTR No. 7 Phase 2, informed GRSP (GRSP-52-18) about the ongoing activities of the group. He added that the last meeting of the group was held in Geneva on 10-11 December 2012, prior to the GRSP session. He confirmed that the development of injury criteria was of critical importance and that they would be discussed at the next informal group meeting in February 2013. He added that the development of a proposal for a certification procedure of the dummy was in progress and that extensive study funded by the EC identified areas of dummy performance, particularly regarding reproducibility, that required further

investigation. The expert from Japan, secretary of the informal working group, complemented the presentation of the expert from the United Kingdom introducing the last status report of the informal working group (GRSP-52-23). He also confirmed the goal of the group to submit a proposal for consideration at the December 2013 session of GRSP.

6. Referring to the discussion held during the November 2012 session of the World Forum for Harmonization of Vehicle Regulations (WP.29) (ECE/TRANS/WP.29/1099, para. 76), GRSP noted that a Mutual Resolution concerning the description and performance of test tools and devices had been adopted (ECE/TRANS/WP.29/2012/124 and WP.29-158-19) and reproduced as ECE/TRANS/WP.29/1101. GRSP, also noted that as part of the proposal of the UN GTR, a specific addenda for the inclusion of the Biofidelic Rear Impact Dummy (BioRID II) in this Resolution would be prepared by the informal working group.

# V. Global technical regulation No. 9 (Pedestrian safety) (agenda item 4)

## A. Phase 2 of the global technical regulation

*Documentation*: ECE/TRANS/WP.29/AC.3/24
ECE/TRANS/WP.29/GRSP/2011/13
Informal documents GRSP-52-31, GRSP-52-32 and GRSP-52-33

7. The expert from Germany, co-Chair of the informal working group on pedestrian safety introduced the third progress report of the group (GRSP-52-31), the updated terms of references (ToR) and operating principles of the informal working group (GRSP-52-32) and a first draft UN GTR for information purposes only (GRSP-52-33). GRSP endorsed the third status report of the informal working group (GRSP-52-31), adopted its new terms of reference (GRSP-52-32) as reproduced in Annex II to this report and agreed to seek endorsement from WP.29 and from the Executive Committee of the 1998 Agreement (AC.3) at their March 2013 sessions.

## B. Proposal for Amendment 2

*Documentation*: ECE/TRANS/WP.29/AC.3/31
ECE/TRANS/WP.29/GRSP/2012/2
ECE/TRANS/WP.29/GRSP/2012/14
Informal document GRSP-52-27

8. The expert from the United States introduced GRSP-52-27 aimed at explaining his study reservation to the proposed amendment to the UN GTR (ECE/TRANS/WP.29/AC.3/31 and ECE/TRANS/WP.29/GRSP/2012/14). He explained that the National Highway Traffic Safety Administration (NHTSA) was currently conducting tests to evaluate differences between target/aim point and first point of contact with respect to testable area and Head Injury Criteria (HIC) outcome. He concluded that, until this testing was completed, he was not in the position to give a final decision on the proposal. GRSP agreed to resume consideration on this subject at its May 2013 session.

# VI. Side impact (agenda item 5)

## A. Draft global technical regulation on Pole Side Impact

*Documentation*: ECE/TRANS/WP.29/AC.3/28
Informal document GRSP-52-07

9. The expert from Australia, on behalf of the Chair of the informal working group on Pole Side Impact (PSI), introduced GRSP-52-07, including the last progress report of the group and a draft of the UN GTR. He explained that the draft was provided to gather comments from GRSP experts to be sent in writing to the Chair of the informal working group by 25 January 2013. He underlined that comments were particularly sought on Annex 2 of Part II of the draft UN GTR, which was setting out the seating procedure for the test dummy ($50^{th}$ percentile male dummy). Concerning the scope, the expert from OICA argued that real-world data indicated the low involvement of $N_1$ and $N_2$ category of vehicles in PSI accidents and proposed their removal from the scope. The expert from Australia explained that the Contracting Parties (CPs) to the 1998 Agreement had the discretion to exclude particular vehicle types for which there were sufficient national safety measures to justify the restraint application of the UN GTR (see GRSP-52-07, Part I, para. 47).

10. GRSP agreed to resume consideration on this agenda item at its May 2013 session and noted that AC.3 at its November 2012 session agreed to fix the deadline for the Phase 1 of the informal working group at March 2014 (ECE/TRANS/WP.29/1099, para. 105) Moreover, the secretariat was requested to distribute GRSP-52-07 (only the part related to the draft UN GTR) with an official symbol.

## B. Harmonization of side impact dummies

*Documentation*: ECE/TRANS/WP.29/AC.3/28

11. The expert from the United States, Chair of the informal working group on harmonization of side impact dummies, gave an oral report of the work progress of the group. She confirmed that her group was finalizing the validation of the $50^{th}$ percentile of the World Side Impact Dummy (World SID). Concerning the $5^{th}$ percentile female dummy she announced that the informal working group agreed to start over pelvic re-design reducing contact during pelvis impact test. She added that this activity could take time. Accordingly, she suggested suspending the activity of the Informal Working Group on Pole Side Impact once the Phase I would be concluded, awaiting the outcome of the informal group on side impact dummies on the $5^{th}$ percentile female.

12. GRSP agreed to resume consideration on this subject at its May 2013 session and to seek consent of AC.3 to fix the deadline mandate of the informal working group at December 2015.

# VII. Global technical regulation on electric vehicles (agenda item 6)

*Documentation*: ECE/TRANS/WP.29/AC.3/32
Informal document GRSP-52-15

13. The expert from the United States, Chair of the informal working group on Electric Vehicle Safety (EVS) introduced the report of the second meeting of the group held on October 23-25, 2012 in Bonn, Germany. He explained that the informal working group had begun considering a first proposal of a UN GTR drafted by the expert from OICA consisting of:

(a) provisions for protection of electrical shock for in-use and post-crash, and

(b) provisions to ensure safety performance of the Rechargeable Energy Storage System (REESS).

14. He clarified that the proposal would take over the provisions devised by the REESS group and recently adopted into UN Regulation No. 100. He concluded that, although the proposal would need improvement, it would form a good basis for future discussions.

15. GRSP noted that the next meeting of the informal working group was scheduled on 16-18 April 2013 in Tokyo, Japan.

# VIII. Crash compatibility (agenda item 7)

16. No new information was provided for this agenda item.

# IX. Hydrogen and fuel cell vehicles (agenda item 8)

*Documentation*: ECE/TRANS/WP.29/AC.3/17
ECE/TRANS/WP.29/GRSP/2012/12
ECE/TRANS/WP.29/GRSP/2012/23
Informal document GRSP-52-08

17. The expert from Japan, Chair of the informal working subgroup safety (SGS) and the expert from the United States introduced the most draft UN GTR on hydrogen and fuel cell vehicles ECE/TRANS/WP.29/GRSP/2012/23, superseding ECE/TRANS/WP.29/GRSP/2012/12 and the final status report (GRSP-52-08) of SGS. The expert from the United States of America stated that the application of the current proposal of the UN GTR addressing passenger vehicles and three main systems: (i) fuel system integrity, (ii) electrical safety and (iii) hydrogen storage systems. The expert from the United States clarified that Phase 2 of the UN GTR would address the performance requirements of containers of any kind (i.e. liquefied hydrogen, cryo-compressed hydrogen (CcH2)) and harmonized types of crash tests (rear, front and lateral). He clarified that Contracting Parties, adopting this first phase of the UN GTR may apply crash tests standards in use in their national legislations to verify post-crash integrity of the three vehicle systems mentioned above.

18. GRSP adopted the final progress report of SGS (GRSP-52-08), as reproduced in Annex III to this report. GRSP agreed to remove the square brackets from paras. 5.3.1.2.4.3. and 5.3.2.2.3. and to recommend ECE/TRANS/WP.29/GRSP/2012/23

not amended and the final progress report to AC.3 for consideration and vote at its June 2013 session.

19. Finally, GRSP expressed its appreciation to Mr. V. Blinov from United Nations Office Geneva linguistic translation services for the accuracy in translating the Russian version of the draft UN GTR.

## X. Regulation No. 11 (Door latches and hinges) (agenda item 9)

20. No new information was provided for this agenda item.

## XI. Regulation No. 14 (Safety-belt anchorages) (agenda item 10)

*Documentation*: Informal document GRSP-52-19

21. The expert from OICA introduced GRSP-52-19, aimed at exempting vehicles with one seating position per row from ISOFIX provisions and at introducing exemptions for vehicles not intended to transport children during normal use. The proposal received some comments from GRSP experts; the secretariat was requested to divide the proposal into two separate official documents for the May 2013 session of GRSP.

## XII. Regulation No. 16 (Safety-belts) (agenda item 11)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/20
ECE/TRANS/WP.29/GRSP/2012/25
Informal documents GRSP-52-06, GRSP-52-14 and GRSP-52-26

22. The expert from CLEPA introduced a revised proposal (ECE/TRANS/WP.29/GRSP/2012/20) proposing to increase the strap acceleration to 3 g to prevent the locking phenomena during the buckling up of the safety-belts. GRSP finally adopted ECE/TRANS/WP.29/GRSP/2012/20, including a correction to Annex 13 to the UN Regulation, as reproduced by Annex IV to this report. The secretariat was requested to submit ECE/TRANS/WP.29/GRSP/2012/20 as amended to WP.29 and AC.1, for consideration and vote at their June 2013 sessions as draft Supplement 4 to the 06 series of amendments to UN Regulation No. 16.

23. The expert from OICA introduced GRSP-52-06 proposing an update of the air-bag labelling provisions into UN Regulation No. 16. The proposal received some comments such as those by the expert from Sweden (GRSP-52-14) proposing to align UN Regulation No. 16 completely with the provisions recently introduced into UN Regulation No. 94 (frontal collision) on this subject. Other experts suggested coming back to the preceding proposal (GRSP-51-14) referring to the paragraph numbers of UN Regulation No. 94 instead. GRSP agreed to resume discussion at its May 2013 session.

24. The expert from EC introduced GRSP-52-26, aimed at aligning the French version of paragraph 7.6.2.2. to the English one. GRSP adopted GRSP-52-26 as reproduced in Annex IV to this report and requested the secretariat to submit it to WP.29 and AC.1, for consideration and vote at their June 2013 sessions as draft Corrigendum 1 to Revision 7 to the UN Regulation.

25. GRSP noted ECE/TRANS/WP.29/GRSP/2012/25, aimed at simplifying transitional provisions to the UN Regulation. However, GRSP preferred to defer discussion on this subject at its further session, awaiting further comments and the outcome of the activities of

the WP.29 informal working group on the International World Vehicle Type Approval (IWVTA).

## XIII. Regulation No. 17 (Strength of seats) (agenda item 12)

*Documentation*: ECE/TRANS/WP.29/GRSP/2009/15
Informal document GRSP-52-30-Rev.1
ECE/TRANS/WP.29/GRSP/2011/10

26. Referring to the decision taken at its previous session, GRSP agreed to keep ECE/TRANS/WP.29/GRSP/2009/15 in the agenda of its future sessions awaiting the outcome of the informal working group on UN GTR No. 7 Phase 2.

27. GRSP noted GRSP-52-30-Rev.1, tabled by the expert from Germany and superseding ECE/TRANS/WP.29/GRSP/2011/10, on new provisions for folding seats. GRSP agreed to resume consideration on this subject at its May 2013 session, to allow study by its experts and possible inclusion of transitional provisions and/or provisions as a new series of amendments to the UN Regulation. The secretariat was requested to distribute GRSP-52-30-Rev.1 with an official symbol at the next session of GRSP.

## XIV. Regulation No. 22 (Protective helmets) (agenda item 13)

28. No new information was provided for this agenda item.

## XV. Regulation No. 29 (Cabs of commercial vehicles) (agenda item 14)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/19
ECE/TRANS/WP.29/GRSP/2012/24
Informal documents GRSP-52-21 and GRSP-52-28

29. The expert from Sweden introduced GRSP-52-28, proposing an alternative to the scope of the UN Regulation as suggested by the expert from the Russian Federation (ECE/TRANS/WP.29/GRSP/2012/19). He clarified that the mandate of the informal working group had been the development of new testing procedures for trucks of categories $N_2$ with a gross vehicle mass exceeding 7.5 t and for categories $N_3$. He added that the testing procedures for trucks of categories $N_1$ and $N_2$ with a gross vehicle mass not exceeding 7.5 t were to be left unchanged. GRSP agreed to keep GRSP-52-28 as a reference in the agenda and to resume discussion on this subject at its May 2013 session on the basis of proposals prepared by the experts from Sweden and OICA.

30. The expert from Germany gave a presentation (GRSP-52-21) to introduce a proposal (ECE/TRANS/WP.29/GRSP/2012/24), aimed at allowing arrangements of the test dummy to enable upper legs rotation around the vertical and transverse axis. He added that these improvements would allow a more realistic assessment of the survival space in the cab. The expert from the Russian Federation did not oppose the proposal, however, he stated that he preferred a linear and geometric assessment criteria of the survival space (as presently found in UN Regulation No. 33) rather than using a dummy. Finally, GRSP agreed to remove the square brackets from the text of ECE/TRANS/WP.29/GRSP/2012/24 and adopted it not amended. The secretariat was requested to submit ECE/TRANS/WP.29/GRSP/2012/24 to WP.29 and AC.1, for consideration and vote at their June 2013 sessions as draft Supplement 2 to the 02 series of amendments and as Supplement 1 to the 03 series of amendments to UN Regulation No. 29.

# XVI. Regulation No. 44 (Child restraint systems) (agenda item 15)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/15
ECE/TRANS/WP.29/GRSP/2012/21
ECE/TRANS/WP.29/GRSP/2012/22
Informal documents GRSP-52-04, GRSP-52-11-Rev.1 and GRSP-52-12

31. The expert from France gave a presentation (GRSP-52-12) to show the risks of child ejection in roll-over accidents. Accordingly, he introduced GRSP-52-11-Rev.1 (amending ECE/TRANS/WP.29/GRSP/2012/21). He clarified that the proposal would not prevent the installation of shield systems in favour of harness systems to restrain the child on the seat, but rather it would introduce improved overturning test procedures to reduce the risk of child ejection. GRSP adopted ECE/TRANS/WP.29/GRSP/2012/21 as amended by Annex V to this report. The secretariat was requested to submit the proposal to WP.29 and AC.1, for consideration and vote at their June 2013 sessions as draft Supplement 7 to the 04 series of amendments to UN Regulation No. 44.

32. The experts from France, the Netherlands and the Russian Federation withdrew ECE/TRANS/WP.29/GRSP/2012/22, ECE/TRANS/WP.29/GRSP/2012/15 and GRSP-52-04 respectively.

33. Referring to the decision of the Administrative Committee for the coordination of Work (AC.2) at the November 2012 session (ECE/TRANS/WP.29/1099, para. 12), the expert from Germany informed GRSP about the action undertaken by the Type Approval Authority concerning the belt guide device. He explained that a letter drafted by his Administration was sent to the Type Approval Authority of Hungary requesting for the withdrawal of the type approval of the belt guide device granted as a child restraint system according to UN Regulation No. 44. Meanwhile, he informed GRSP that his Administration also notified the Rapid Alert System for Non-Food Consumer Products of the European Union (RAPEX) of a dangerous product. The expert from Hungary agreed to keep informed GRSP about the decision of the Type Approval Authority of his country on this issue.

# XVII. Regulation No. 94 (Frontal collision) (agenda item 16)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/7
ECE/TRANS/WP.29/GRSP/2012/16
Informal documents GRSP-52-13, GRSP-52-24, GRSP-52-25 and GRSP-52-29

34. The expert from OICA introduced ECE/TRANS/WP.29/GRSP/2012/16, superseding ECE/TRANS/WP.29/GRSP/2012/7, proposing requirements for vehicles with automatically activated door locking systems. GRSP agreed to remove the square brackets from paragraph 5.2.4.1. and adopted ECE/TRANS/WP.29/GRSP/2012/16, not amended. The secretariat was requested to submit it to WP.29 and AC.1 at their June 2013 sessions for consideration and vote as draft Supplement 4 to the 02 series of amendments to UN Regulation No. 94.

35. The expert from Germany introduced GRSP-52-24 to show the outcome of the frontal impact and compatibility assessment research (FIMCAR) as part of the seventh programme of research of the European Union. He indicated that amongst the candidate barriers to assess compatibility, the full-width deformable barrier (FWDB) showed better results for the time being.

36. The expert from France, Chair of the informal working group on Frontal Impact, introduced the last progress report of the group (GRSP-52-25). He reiterated that the informal working group was considering existing results from ongoing research programmes on this matter at the international level (i.e. FIMCAR) and that as a follow-up to these results, the group would propose an amendment to UN Regulation No. 94 by the May 2014 session of GRSP. Accordingly, he indicated three possible scenarios amending the UN Regulation:

(a) no change to the current requirements (benefits of 2.0 percent or less of all vehicle occupants Killed and Seriously Injured (KSI));

(b) full width barrier (FW) test added to the offset deformable barrier test (ODB) (benefits of 5 to 12 per cent of all occupants KSI); and

(c) FW test and replace ODB test with Progressive Deformable Barrier (PDB) test (benefits of 7 to 14 per cent of all occupants KSI).

37. Furthermore, for scenario (b) and (c) he added that the inclusion of a FWDB would lead only to slightly increased benefits (0.3 to 0.8 percent as stated in the FIMCAR final report) and the airbag triggering time more linked to real world. However, he concluded that the option of a Full Width Rigid Barrier (FWRB), even if it would introduce slightly lower benefits, this option would give higher harmonization potentials (Australia, Japan, and United States). Finally, he asked GRSP experts to clearly indicate their barrier preference to better focus the efforts of the informal working group. The expert from Germany stated that due to the time constraints for the first phase of improving UN Regulation No. 94, a FWRB could be the solution for Phase 1 and the FWDB would remain as a candidate for the Phase 2.

38. The majority of GRSP experts were not in a position to provide such an indication and agreed to resume discussion on this matter at its May 2013 session, awaiting the results of a cost benefit analysis for both FWDB and FWRB prepared by the informal working group.

39. The expert from FIA Foundation informed GRSP about the results of third Latin American New Car Assessment Programme (LANCAP) recently held (GRSP-52-13). He gave a presentation (GRSP-52-29) informing that as a conclusion of the third phase of the programme, LANCAP was recommending all Latin American governments to make the requirements of UN Regulation No. 94 mandatory for all cars sold in their markets.

# XVIII. Regulation No. 95 (Lateral collision) (agenda item 17)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/9
ECE/TRANS/WP.29/GRSP/2012/17

40. The expert from OICA introduced ECE/TRANS/WP.29/GRSP/2012/17 superseding ECE/TRANS/WP.29/GRSP/2012/9, on identical requirements for vehicles with automatically activated door locking systems for UN Regulation No. 95 (see para. 34 above). GRSP adopted ECE/TRANS/WP.29/GRSP/2012/17 as amended by Annex VI to this report. The secretariat was requested to submit it to WP.29 and AC.1 at their June 2013 sessions for consideration and vote as draft Supplement 3 to the 03 series of amendments to UN Regulation No. 95.

# XIX. Regulation No. 100 (Construction and functional safety of battery electric vehicles) (agenda item 18)

*Documentation*: Informal documents GRSP-52-05 and GRSP-52-09

41. The expert from Germany, on behalf of the Chair of the group of interested experts on REESS, introduced the latest status report of this group, its revised terms of reference and a new proposed mandate as an informal working group (GRSP-52-05). He clarified that these actions would be needed to cover electric vehicles of category L into UN Regulation No. 100 and to replace the expired informal working group on Electric Safety (ELSA). The expert from Japan made a presentation (GRSP-52-09) proposing to establish a new UN Regulation for vehicle category L, rather than amending UN Regulation No. 100, because of its different structure and safety concept from categories M/N.

42. Finally, GRSP agreed to establish the new informal working group and to seek endorsement of WP.29 at its March 2013 session. Accordingly, GRSP adopted the terms of reference of the group, contained in GRSP-52-05 and reproduced in Annex VII to this report supporting this request.

# XX. Buses and coaches (agenda item 19)

43. No new information was provided for this agenda item.

# XXI. Draft Regulation on pedestrian safety (agenda item 20)

## A. Proposal for Supplement 1 to the draft Regulation

*Documentation*: ECE/TRANS/WP.29/GRSP/2011/18
ECE/TRANS/WP.29/GRSP/2011/19

44. With reference to the discussion under agenda item 4(b) (see paras. 8 and 9), GRSP agreed to defer discussion on this agenda item to its May 20123 session.

## B. Proposal for the 01 series of amendments to the draft Regulation

*Documentation*: ECE/TRANS/WP.29/GRSP/2011/14
ECE/TRANS/WP.29/GRSP/2011/20

45. GRSP agreed to defer discussion on this agenda item awaiting the outcome of the informal working group.

# XXII. Draft new Regulation on child restraint systems (agenda item 21)

*Documentation*: ECE/TRANS/WP.29/GRSP/2012/18
Informal documents WP.29-158-22, WP.29-158-27,
WP.29-158-31, GRSP-52-16, GRSP-52-17 and GRSP-52-20

46. GRSP noted that WP.29 at its November 2012 session referred WP.29-158-22 to GRSP concerning further amendments and correction to the draft Regulation on Enhanced Child Restraint Systems (ECRS), adopted during that session (ECE/TRANS/WP.29/2012/53 and Corr.1). GRSP noted that further changes were needed

(GRSP-52-16 and GRSP-52-20, superseding WP.29-158-22). GRSP agreed to resume consideration of this subject at its May 2013 session awaiting a consolidated proposal of amendments and to keep GRSP-52-16 and GRSP-52-20 as a reference in the agenda.

47. GRSP also noted a correction to a footnote (WP.29-158-27) in the new UN Regulation, referring to the informal working group website as the temporary repository for the drawing and specifications of Q dummies (ECE/TRANS/WP.29/1099, see para. 58). GRSP did not propose any change to WP.29-158-27 and endorsed the use of such specifications for application purposes of the UN Regulation. GRSP endorsed final approval of WP.29-158-27 at the March 2013 session of WP.29.

48. GRSP considered ECE/TRANS/WP.29/GRSP/2012/18, proposing test conditions to have the same stringency level in the acceleration and deceleration sled lateral impact tests. GRSP agreed to remove the square brackets from para. 7.1.3.1.3.4. and adopted it not amended. The secretariat was requested to submit ECE/TRANS/WP.29/GRSP/2012/18 to WP.29 and AC.1 for consideration and vote at their March 2013 sessions, as draft Supplement 1 to the new UN Regulation.

49. The expert from France, Chair of the informal working group on Child Restraint Systems, introduced the latest status report of his group (GRSP-52-17). He clarified that the group was working on Phase 2, to develop provisions for non-integral ISOFIX CRS (child restrained by adult safety belts). The expert from EC expressed his preference to dedicate the new UN Regulation only to ISOFIX CRS and UN Regulation No. 44 to CRS of other kinds. Also the expert from Germany made similar comments and suggested the removal of ISOFIX provisions from UN Regulation No. 44, to be dedicated only to non ISOFIX CRS.

# XXIII. Other business (agenda item 22)

## A. Exchange of information on national and international requirements on passive safety

*Documentation*: Informal document GRSP-52-22

50. The expert from Japan introduced GRSP-52-22, to inform GRSP about the initiatives undertaken in his country concerning new concepts for transportation and mobility support for parents having children and elderly people.

## B. 1997 Agreement (Inspections) – Development of Rule No. 2

*Documentation*: Informal document WP.29-158-21 (ECE/TRANS/WP.29/2013/32)

51. GRSP noted the decision of WP.29 (ECE/TRANS/WP.29/1099, para. 69) to refer a proposal of amendments to UN Rule No. 2 to its subsidiary body (including GRSP), this would reduce differences with the corresponding EU directives (WP.29-158-21 now available as official document ECE/TRANS/WP.29/2013/32). GRSP requested its experts to provide comments on this proposal by its May 2013 session.

## C. Intelligent Transport Systems (ITS)

*Documentation*: Informal documents WP.29-157-06, GRSP-52-02

52. GRSP noted the request of WP.29 to its subsidiary bodies to provide comments by June 2013 on a proposal for design/control principles of Advanced Driver Assistance Systems (WP.29-157-06). It was also noted that the expert from OICA provided first draft

comments (GRSP-52-02) on the proposal. GRSP agreed to resume discussion on this subject at its May 2013 on the basis of a consolidated proposal of amendments provided by the expert from OICA. GRSP requested its experts to send comments concerning GRSP-52-02 to the expert from OICA by 25 January 2013.

### D. Quiet Road Transport Vehicles (QRTV)

*Documentation*: ECE/TRANS/WP.29/AC.3/33

53. The expert from the United States, informed GRSP about the second meeting of the informal working group on QRTV held in Berlin on 5-7 December 2012. He explained that the group started to develop the UN GTR on the basis of the recommendation of the UN guidelines for alert sound contained in the Consolidated Resolution on the Construction of Vehicles (R.E.3) and on the recommendation of the previous informal working group. He informed GRSP about the intention of NHTSA to publish in January 2013 the Notice of Proposed Rulemaking (NPRM) that is to be considered at the next meeting of the informal working group.

### E. Definition and acronyms in Regulations under GRSP responsibilities on the basis of an initiative of the Working Party on Pollution and Energy

54. GRSP recommended the Chairs of its informal working groups to send comments to the expert from EC concerning the provisional list of acronyms (GRSP-51-03) he prepared and complete it with those that were missing. GRSP agreed to resume consideration on this subject at its May 2013 session.

### F. Development of the International Whole Vehicle Type Approval (IWVTA) system and involvement of the Working Parties

*Documentation*: Informal document WP.29-156-21-Rev.1, GRSP-52-10

55. The expert from Japan, GRSP ambassador on IWVTA, introduced GRSP-52-10 showing a list of priority of discussion of candidate UN Regulations to be included in the IWVTA. GRSP requested its experts to provide detailed comments by its May 2013 session.

### G. Highlights of June and November 2012 sessions of WP.29

56. The Secretary reported on the highlights of the 157$^{th}$ and 158$^{th}$ sessions of WP.29 (ECE/TRANS/WP.29/1097 and ECE/TRANS/WP.29/1099).

### H. Collective amendments – Regulations Nos. 12, 94 and 95

*Documentation*: Informal document GRSP-52-01

57. The expert from OICA introduced GRSP-52-01, proposing provisions for the coupling systems for charging the REESS. The secretariat was requested to distribute GRSP-52-01 with an official symbol at the May 2013 session of GRSP.

## XXIV. Election of officers (agenda item 23)

58. In compliance with Rule 37 of the Rules of Procedure (TRANS/WP.29/690 and ECE/TRANS/WP.29/690/Amend.1), GRSP called for the election of officers. The representatives of the Contracting Parties, present and voting, elected unanimously

Ms. Mary Versailles (United States of America) as Chair and Mr. Jae-Wan Lee (Republic of Korea) as Vice-Chair for the sessions of GRSP scheduled in the year 2013.

## XXIV. Tributes (agenda item 24)

59. Learning that Mr. Y. Souchet would no longer participate in future sessions of GRSP, the group acknowledged his valuable contributions to the work of GRSP and wished him all the best in his future activities.

## XXV. Provisional agenda for the next session (agenda item 25)

60. For its fifty-third session, scheduled to be held in Geneva from 13 (2.30 p.m.) to 17 (12.30 p.m.) May 2013, GRSP noted that the deadline for submission of official documents to the secretariat was 15 February 2013, twelve weeks prior to the session. Moreover, the following provisional agenda was adopted:

1. Adoption of the agenda.
2. Global technical regulation No. 7 (Head restraints).
3. Global technical regulation No. 9 (Pedestrian safety):
   (a) Phase 2 of the global technical regulation;
   (b) Proposal for Amendment 2.
4. Side impact:
   (a) Draft global technical regulation on Pole Side Impact;
   (b) Harmonization of side impact dummies.
5. Global technical regulation on electric vehicles.
6. Crash compatibility.
7. Hydrogen and fuel cell vehicles.
8. Regulation No. 14 (Safety-belt anchorages).
9. Regulation No. 16 (Safety-belts).
10. Regulation No. 17 (Strength of seats).
11. Regulation No. 22 (Protective helmets).
12. Regulation No. 29 (Cabs of commercial vehicles).
13. Regulation No. 44 (Child restraints systems).
14. Regulation No. 94 (Frontal collision).
15. Regulation No. 95 (Lateral collision).
16. Regulation No. 100 (Battery electric vehicle safety).
17. Buses and coaches.
18. Regulation No. 127 (Pedestrian safety):
   (a) Proposal for Supplement 1 to Regulation No. 127;
   (b) Proposal for the 01 series of amendments to Regulation No. 127.
19. Draft new Regulation on child restraint systems.

20. Collective amendments – Regulations Nos. 12, 94 and 95.

21. Other business:

(a) Exchange of information on national and international requirements on passive safety;

(b) 1997 Agreement (Inspections)–Development of Rule No. 2;

(c) Intelligent Transport Systems (ITS);

(d) Quiet Road Transport Vehicles (QRTV);

(e) Definition and acronyms in Regulations under GRSP responsibilities on the basis of an initiative of the Working Party on Pollution and Energy;

(f) Development of the International Whole Vehicle Type Approval (IWVTA) system and involvement of the Working Parties.

(g) Highlights of the March 2013 session of WP.29.

# Annex I

**[English only]**

## List o f informal documents (GRSP-52-…) distributed without an official symbol during the session

| *No.* | *Transmitted by* | *Agenda item* | *Language* | *Title* | *Follow-up* |
|---|---|---|---|---|---|
| 01 | OICA | 22(g) | E | Proposal for amendments to Regulations No. 12 (Protection of drivers against the steering mechanism in the event of impact), No. 94 (Protection of occupants against frontal collision) and No. 95 (Protection of occupants against lateral collision) | (b) |
| 02 | OICA | 22(c) | E | OICA comments to the draft Design Principles for Control Systems of ADAS (Informal document WP.29-157-06) | (c) |
| 03 | (Chair of GRSP) | 1 | E | Running order of the provisional agenda | (a) |
| 04 | Russian Federation | 15 | E | Proposal for draft Corrigendum 5 to Revision 2 to UN Regulation No. 44 (Child Restraint Systems) | (a) |
| 05 | Chair of REES group | 18 | E | Status and progress report of ELSA and the group of interested experts on REESS (Rechargeable Energy Storage Systems) and updated ToR | (a) |
| 06 | OICA | 11 | E | Proposal for Supplement 4 to the 06 series of amendments to UN Regulation 16 (safety belts) | (c) |
| 07 | (Chair of the informal working group on Pole Side Impact UN GTR) | 5(a) | E | Third Progress Report of the Informal Group on a Pole Side Impact (PSI) GTR | (a) |
| 08 | OICA | 8 | E | Report on the development of a global technical regulation for hydrogen vehicles | (d) |
| 09 | Japan | 18 | E | Proposal related to the establishment of a New Regulation for Category L Report on the development of a global technical regulation for hydrogen vehicles | (a) |

| *No.* | *Transmitted by* | *Agenda item* | *Language* | *Title* | *Follow-up* |
|---|---|---|---|---|---|
| 10 | (IWVTA ambassador of GRSP) | 22(f) | E | Priority of Discussion on Technical Requirements for IWVTA and Draft Report to IWVTA Informal Meeting | (c) |
| 11-Rev.1 | France | 15 | E | Proposal for amendments to ECE/TRANS/WP.29/GRSP/2012/21 | (d) |
| 12 | France | 15 | E | Proposal for amendments to ECE/TRANS/WP.29/GRSP/2012/21 | (a) |
| 13 | FIA Foundation | 16 | E | Safety levels of cars in Latin America still too low but some brands are making progress | (a) |
| 14 | Sweden | 11 | E | Proposal for Supplement 4 to the 06 series of amendments to Regulation 16 (safety belts) | (c) |
| 15 | USA | 6 | E | Report of the 2nd Meeting of the informal working group on Electrical Vehicle Safety - Global Technical Regulation | (a) |
| 16 | Germany | 21 | E | Proposal for amendment to document ECE/TRANS/WP.29/2012/53 | (c) |
| 17 | Chair of informal working group on CRS | 21 | E | Status report of the informal working group | (a) |
| 18 | Chair of GTR7 Phase II informal working group | 3 | E | Status report of the informal working group | (a) |
| 19 | OICA | 10 | E | Proposal of amendments to UN Regulation No. 14 | (b) |
| 20 | Chair of the informal working group on CRS | 21 | E | Proposal for correction to the new UN Regulation on CRS (ECE/TRANS/WP.29/2012/53) | (c) |
| 21 | Germany | 14 | E | Regulation No. 29/02 manikin update ECE/TRANS/WP.29/GRSP/2012/24 | (a) |
| 22 | Japan | 22(a) | E | Approval system for new mobility | (a) |
| 23 | Japan | 3 | E | Draft 4th progress report of the informal group on Phase 2 of gtr No. 7 (Head restraints gtr Phase2) | (a) |
| 24 | Germany | 7 | E | FIMCAR Frontal Impact Assessment Approach | (a) |
| 25 | Chair of the Frontal Impact IWG | 16 | E | Status report of the Informal Working Group on Frontal Impact | (a) |

| *No.* | *Transmitted by* | *Agenda item* | *Language* | *Title* | *Follow-up* |
|---|---|---|---|---|---|
| 26 | EC | 11 | E | Regulation No 16 – Corrigendum | (d) |
| 27 | USA | 4(b) | E | Comments on ECE/TRANS/WP.29/GRSP/2012/14 | (c) |
| 28 | Sweden | 14 | E | Regulation No. 29 – 03 series of amendments | (c) |
| 29 | FIA Foundation | 16 | E | Latin NCAP | (a) |
| 30-Rev.1 | Germany | 12 | E | Proposal for Supplement 1 to the 08 series of amendments to UN Regulation No. 17 (Seat strength) | (b) |
| 31 | Chair of the IWG GTR9 Phase 2 | 4(a) | E | Draft Third progress report of the informal group on Phase 2 of gtr No. 9 (IG GTR9 - PH2) | (a) |
| 32 | Chair of the IWG GTR9 Phase 2 | 4(a) | E | GRSP Informal Group UN Global Technical Regulation No. 9 – Phase 2 WP.29 and GRSP Decisions Draft Operating Principles Draft Terms of Reference | (a) |
| 33 | Chair of the IWG GTR9 Phase 2 | 4(a) | E | GTR No. 9 – Draft proposal for Amendment 2 | (a) |

*Notes*:

(a) Consideration completed or superseded.

(b) Continue consideration at the next session with an official symbol.

(c) Continue consideration at the next session as informal document.

(d) Adopted and to be submitted to WP.29

# Annex II

## Revised terms of reference of the informal working group on Pedestrian safety gtr No. 9 - Phase 2

### Adopted text based on GRSP-52-32 (see para. 7 of this report)

The modification to the previous terms of references adopted by WP.29 with the report of fiftieth GRSP session (see ECE/TRANS/WP.29/1097 para. 16), are marked in bold for new or strikethrough for deleted characters.

## A. Introduction

1. GRSP agreed to set up an informal group on pedestrian safety Phase 2 in order to further develop proposals to amend UN GTR No.9 on introducing the Flexible Pedestrian Legform Impactor (Flex-PLI) (ECE/TRANS/WP.29/AC.3/24, ECE/TRANS/WP.29/1079, para. 101).

2. The Flex-PLI Technical Evaluation Group (Flex-TEG) has conducted technical evaluation activities on the Flex-PLI since September 2005. As result of the Flex-TEG activity Japan has submitted proposals for amendments on UN GTR No.9 - Phase 2 as well as on the draft UN-Regulation on Pedestrian Safety (Phase 2). At the 49th session of GRSP some delegations have expressed outstanding reservations with regard to the introduction of the Flex-PLI and requested to set up an informal group to discuss related issues and to develop proposals to amend UN GTR No. 9.

3. GRSP agreed to seek the consent of WP.29 and AC.3 to mandate a new informal group to solve the pending issues for the incorporation of the Flex-PLI in Phase 2 of the UN GTR No. 9 and in the draft UN Regulation on pedestrian safety in the same time. The World Forum agreed to set up this informal group, subject to the submission to WP.29 of the appropriate terms of references (ECE/TRANS/WP.29/1091, paras. 36 and 100).

## B. Objective of the informal working group

4. The main objective of the Informal Group UN GTR No. 9 – (Phase 2 GTR9-PH2) is to develop a draft proposal to amend the UN global technical regulation No.9 - Phase 2 on pedestrian safety by introducing the Flex-PLI as a single harmonized test tool in order to enhance the safety level of lower leg pedestrian protection.

5. The work of the informal group shall not be limited to draft proposals to amend GTR No. 9, but shall cover the development of a complementary draft proposal to amend the draft UN Regulation on pedestrian safety.

6. The informal group may also review further draft proposals to improve and / or clarify aspects of the legform test procedure.

7. The informal working group GTR9-PH2 shall work on the items listed in Appendix 1 to this document.

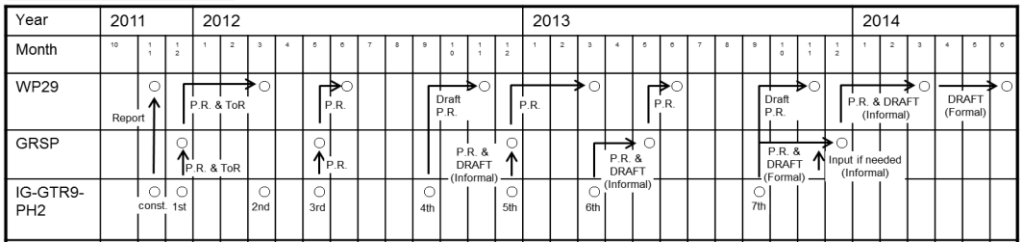
## C. Work plan and time schedule

| | |
|---|---|
| May 2011 | Proposal of Draft ToR to GRSP (informal document) |
| June 2011 | GRSP to seek consent of WP.29 and AC.3 to mandate new informal group on pedestrian protection |
| 03 November 2011 | Constitutional meeting of the IG GTR9-PH2 (Bonn, GER) |
| November 2011 | Report to WP.29 on activities of IG |
| 01/02 December 2011 | First meeting of the IG GTR9-PH2 (Geneva, CH) |
| December 2011 | Progress-Report to GRSP, submission of Draft ToR to WP.29 |
| March 2012 | Progress-Report to WP.29 and adoption of ToR by WP.29/AC.3 |
| March 2012 | Second meeting of the IG GTR9-PH2 |
| May 2012 | Third meeting of the IG GTR9-PH2 |
| May 2012 | Progress-Report to GRSP |
| September 2012 | Fourth meeting of the IG GTR9-PH2 |
| November 2012 | **Draft** Progress-Report to WP.29 |
| December 2012 | Fifth meeting of the IG GTR9-PH2 |
| December 2012 | Progress report and submission of informal ~~draft~~ documents to GRSP |
| **March 2013** | **Progress-Report to WP.29** |
| March 2013 | Sixth meeting of the IG GTR9-PH2 |
| May 2013 | **Progress Report and submission of informal** proposal **for discussion** to GRSP |
| **June 2013** | **Progress-Report to WP.29** |
| **September 2013** | **Seventh meeting of the IG GTR9-PH2** |
| **November 2013** | **Draft Progress-Report to WP.29** |
| **December 2013** | **Progress Report and submission of formal proposal to GRSP, agreement by GRSP** |
| **June 2014** | Adoption by WP.29 |

※Additional meetings (including virtual meetings) could be held according to the progress in discussions and the decisions of the informal group.

**Overall Schedule**

P.R.: Progress Report



**Appendix 1**

**Activity List**

**The major tasks that will be performed by the IG GTR9-PH2 include:**

1. Review and consideration of remaining items:

   (a) Review of Flex-TEG activities → to reach common understanding;

   (b) Assessment of biofidelity (comparison of FlexPLI and EEVC lower legform impactor);

   (c) Assessment of benefit and costs (injury reduction, additional benefit compared to EEVC lower legform impactor);

   (d) Technical specifications (drawings) and PADI (user manual);

   (e) Evaluation of durability;

   (f) Test procedure (rebound phase, best practice, velocity measurement etc.);

   (g) Certification tests;

   (h) Review and exchange of test results;

   (i) Evaluation of reproducibility and repeatability;

   (j) Evaluate and decide on performance / injury criteria and threshold values;

   (k) Evaluation of vehicle countermeasures (assessment of technical feasibility).

2. Develop a draft proposal to amend UN GTR No. 9 - Phase 2.

3. Develop a complementary draft proposal to amend draft UN Regulation on Pedestrian Safety (including a recommendation for transitional provisions based on item 1).

# Annex III

## Report on the development of a global technical regulation for hydrogen vehicles

### Adopted text based on GRSP-52-08 (see para. 18 of this report)

## A. Introduction

1. During the 126th Session of WP.29 in March 2002, the Executive Committee of the 1998 Global Agreement (AC.3) adopted its programme of work. Under the programme of work, WP.29 has agreed to begin exchanging information on fuel cell/hydrogen vehicles. In 2002, two proposals for draft regulations for vehicles powered by liquid and compressed gaseous hydrogen, developed under the European Integrated Hydrogen Project (EIHP), were submitted to WP.29. The Working Party on Pollution and Energy formed an informal working group on Hydrogen/Fuel Cell Vehicles (GRPE/IGH) to discuss and evaluate these draft proposals.

2. The IGH, under the chairmanship of Germany, met several times between 2002 and 2007 to discuss the two proposals. The Contracting Parties represented on the IGH, in addition to Germany, are the European Union, France, Japan, the Netherlands, and the United States of America. The European Association of Automotive Suppliers (CLEPA), the International Standards Organization (ISO), and the International Organization of Motor Vehicle Manufacturers (OICA) as well as individual vehicle manufacturers also participate.

## B. Request to develop an action plan

3. At its forty-sixth Session in May 2003, GRPE considered two draft regulations under the 1958 Agreement: proposals – ECE/TRANS/WP.29/GRPE/2003/14 - for liquid hydrogen and Informal document GRPE-46-12 (ECE/TRANS/WP.29/GRPE/2004/3) - for compressed gaseous hydrogen. Following discussions, GRPE concluded that the draft regulations were not ready for adoption and postponed action on the proposals. Some delegations specifically expressed their concern that the proposals were not comprehensive enough, as they addressed only individual components, not the safety of the whole vehicle. The need for evaluating the entire hydrogen fuel system, including conducting a fuel system crash test, which is not addressed by the current draft regulations, was also raised. In addition, a number of Parties found the draft regulations to be very design specific with the potential of constraining future technological innovations. The expert from the United States of America wanted to introduce the draft regulations not under the 1958 Agreement, but under the 1998 Global Agreement.

4. GRPE recommended that, given the global nature of the automotive industry, the group take a more global approach when considering the regulations for hydrogen vehicles and asked the delegations of the European Union, Japan and the United States to clarify their technical and political positions on the development of regulations for hydrogen vehicles. GRPE also directed the IGH to work with Japan, the United States, the European Union and other interested delegations to develop an Action Plan for the assessment of the hydrogen technologies for motor vehicles outlining any necessary research development and testing that would be needed for the development of the gtr. In 2006, Germany, Japan

and the United States reaffirmed their commitment to serve as co-sponsors to develop the gtr. Japan and the United States have served as co-chairs of the reorganized group into the Subgroup on Hydrogen Safety (HFCV-SGS) and began plans to develop an 'Action Plan' for the gtr. The proposal for a new Action Plan and restructured working group was adopted by WP.29 in June 2007. It was proposed that a gtr for hydrogen-powered vehicles based on a component level, subsystems, and whole vehicle crash test approach would be established by 2010 in Phase 1 activity.

5. History of gtr development:

| *Gtr Development Tasks* | *Dates* |
|---|---|
| Adoption of the Action Plan/ Establishment of the SGS | June 2007 |
| 1st HFCV-SGS meeting | September 2007 |
| 2nd HFCV-SGS meeting | January 2008 |
| 3rd HFCV-SGS meeting | May 2008 |
| 4th HFCV-SGS meeting | September 2008 |
| 5th HFCV-SGS meeting | January 2009 |
| Drafting Task Force group meeting for fuel system | April 2009 |
| 6th HFCV-SGS meeting | May 2009 |
| 7th HFCV-SGS meeting | September 2009 |
| 8th HFCV-SGS meeting | January 2010 |
| 9th HFCV-SGS meeting | June 2010 |
| 10th HFCV-SGS meeting | September 2010 |
| Task Force group meeting | November 2010 |
| 11th HFCV-SGS meeting | February 2011 |
| 12th HFCV-SGS meeting | June 2011 |
| working document to 50th GRSP session (ECE/TRANS/WP.29/GRSP/2011/33) | September 2011 |
| Drafting Task Force group meeting | November 2011 |

| *Gtr Development Tasks* | *Dates* |
|---|---|
| 50th GRSP | December 2011 |
| working document to 51st GRSP (ECE/TRANS/WP.29/GRSP/2012/12) | March 2012 |
| 51st GRSP | May 2012 |
| working document to 52nd GRSP (ECE/TRANS/WP.29/GRSP/2012/23) | September 2012 |
| 52nd GRSP | December 2012 |
| final document adopted by WP.29/AC.3 | March or June 2013 |

## C. Evaluation of the safety problem

6. Safety of hydrogen vehicles has emerged in these years as an important motor vehicle safety issue. Ensuring that hydrogen fuel cell and internal combustion engine (ICE) vehicles provide consumers with a high level of safety requires extensive research efforts. Meanwhile, hydrogen vehicles have been deployed as part of demonstration fleets in several countries, including Germany, Japan and United States, yet very little data is available on safety performance of these vehicles.

7. Manufacturers have invested significant resources in producing and marketing these vehicles, and it is important that data is shared including crash test data, with governments to serve as a basis in support of their regulatory actions. Without positive results of basic and comprehensive research and testing, which would demonstrate safety of hydrogen vehicles, governments would not be in a position to develop regulations, or to instil confidence in hydrogen vehicles in prospective consumers.

8. With respect to the application of potential global technical regulation for hydrogen vehicle, the main focus of the scope of the gtr could be vehicles powered entirely by hydrogen. Furthermore, the regulation covers individual components and address the safety performance and integrity of the entire hydrogen fuel system. These requirements have been written, to the extent possible, in terms of performance, as design-specific requirements may potentially constrain future hydrogen-related technological innovations and methodologies.

## D. Review of existing international regulations

9. At present, Japan and the EC have national or international regulations or directives governing the manufacture of hydrogen vehicles in place, however, there have been several voluntary codes and standards developed by international standard setting organizations, including the Society of Automotive Engineers (SAE), International Standards Organization (ISO), etc. These standards generally address a specific component of hydrogen vehicles, such as on board storage tanks or pressure relief devices, but not the safety performance and integrity of the entire hydrogen fuel system or whole vehicles.

10. Existing Regulations, Directives, and International Standards:

(a) Vehicle fuel system integrity

(i) National regulations and directives

a. European Union – Regulation 79/2009 – Type-approval of hydrogen-powered motor vehicles

b. European Union – Regulation 406/2010 — implementing EC Regulation 79/2009

c. Japan — Safety Regulation Article 17 and Attachment 17 – Technical Standard for Fuel Leakage in Collision

d. Japan — Attachment 100 – Technical Standard For Fuel Systems Of Motor Vehicle Fueled By Compressed Hydrogen Gas

e. Canada — Motor Vehicle Safety Standard (CMVSS) 301.1 – Fuel System Integrity

f. Canada — Motor Vehicle Safety Standard (CMVSS) 301.2 – CNG Vehicles

g. Korea — Motor Vehicle Safety Standard, Article 91 – Fuel System Integrity

h. United States — Federal Motor Vehicle Safety Standard (FMVSS) No. 301 - Fuel System Integrity.

i. United States — FMVSS No. 303 – CNG Vehicles

j. China – GB/T 24548-2009 Fuel cell electric vehicles – terminology

k. China -- GB/T 24549-2009 Fuel cell electric vehicles - safety requirements

l. China -- GB/T 24554-2009 Fuel cell engine - performance - test methods

(ii) National and International standards.

a. ISO 17268 — Compressed hydrogen surface vehicle refuelling connection devices

b. ISO 23273-1 — Fuel cell road vehicles — Safety specifications — Part 1: Vehicle functional safety

c. ISO 23273-2 — Fuel cell road vehicles — Safety specifications — Part 2: Protection against hydrogen hazards for vehicles fuelled with compressed hydrogen

d. ISO 14687-2 — Hydrogen Fuel — Product Specification — Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles

e. SAE J2578 — General Fuel Cell Vehicle Safety

f. SAE J2600 – Compressed Hydrogen Surface Vehicle Fueling Connection Devices

g. SAE J2601 – Fueling Protocols for Light Duty Gaseous Hydrogen Surface Vehicles

h. SAE J2799 – Hydrogen Quality Guideline for Fuel Cell Vehicles

(b) Storage system

(i) National regulations and directives:

a. China — Regulation on Safety Supervision for Special Equipment

b. China — Regulation on Safety Supervision for Gas Cylinder

c. Japan — JARI S001(2004) Technical Standard for Containers of Compressed Hydrogen Vehicle Fuel Devices

d. Japan — JARI S002(2004) Technical Standard for Components of Compressed Hydrogen Vehicle Fuel Devices

e. Japan — KHK 0128(2010) Technical Standard for Compressed Hydrogen Vehicle Fuel Containers with Maximum Filling Pressure up to 70MPa

f. Korea — High Pressure Gas Safety Control Law

g. United States — FMVSS 304 - Compressed Natural Gas fuel Container Integrity

h. European Union — Regulation 406/2010 implementing EC Regulation 79/2009

i. China — QC/T 816-2209 Hydrogen supplying and refueling vehicles -specifications

(ii) National and International standards:

a. CSA B51 Part 2 — High-pressure cylinders for the on-board storage of natural gas and hydrogen as fuels for automotive vehicles

b. CSA NGV2-2000 – Basic Requirements for Compressed Natural Gas Vehicle (NGV) Fuel Containers

c. CSA TPRD-1-2009 – Pressure Relief Devices For Compressed Hydrogen Vehicle Fuel Containers

d. CSA HGV 3.1-2011 – Fuel System Component for Hydrogen Gas Power Vehicles (Draft)

e. ISO 13985:2006 — Liquid Hydrogen – Land Vehicle Fuel Tanks

f. ISO 15869:2009 — Gaseous Hydrogen and Hydrogen Blends – Land Vehicle Fuel Tanks (Technical Specification)

g. SAE J2579 — Fuel Systems in Fuel Cell and Other Hydrogen Vehicles

(c) Electric safety

(i) National regulations and directives:

a. Canada — CMVSS 305—Electric Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection

b. ECE — Regulation 100 - Uniform Provisions Concerning the Approval of Battery Electric Vehicles with Regard to Specific Requirements for the Construction and Functional Safety

c. Japan — Attachment 101 – Technical Standard for Protection of Occupants against High Voltage in Fuel Cell Vehicles

d. Japan — Attachment 110 – Technical Standard for Protection of Occupants against High Voltage in Electric Vehicles and Hybrid Electric Vehicles

e. Japan — Attachment 111 – Technical Standard for Protection of Occupants against High Voltage after Collision in Electric Vehicles and Hybrid Electric Vehicles

f. Korea — Motor Vehicle Safety Standard, Article 18-2 – High Voltage System

g. Korea — Motor Vehicle Safety Standard, Article 91-4 – Electrolyte Spillage and Electric Shock Protection

h. United States — FMVSS 305 - Electric-Powered Vehicles: Electrolyte Spillage and Electrical Shock Protection

(ii) National and International Industry standards:

a. ISO 23273-3 — Fuel cell road vehicles — Safety specifications — Part 3: Protection of persons against electric shock

b. SAE J1766 — Electric and Hybrid Electric Vehicle Battery Systems Crash Integrity Testing

c. SAE J2578 — General Fuel Cell Vehicle Safety

## E. Specific safety issues to be addressed

11. Current existing regulations concerning the fuel system do not address the unique properties of hydrogen, hydrogen on-board storage, or fuel cells as a high voltage electrical component in vehicles. For example, hydrogen is colourless, odourless, with a wide range of flammability, and high propensity to leak.

### 1. Unique Safety Challenges Presented by Hydrogen and Hydrogen Vehicles

12. Even though the existing regulations address, for example, the storage of CNG, the on-board storage of hydrogen needs to be examined because of the high pressure that is projected. Also, hydrogen may be stored as a cryogenic liquid, requiring complex venting and cooling, as metal hydrides or as chemical hydrides, with both methods requiring specific safety and environmental considerations. Regulations also exist for electric vehicles, but these may not be properly address the unique properties of the fuel cell as a high voltage component since, among other reasons, fuel cell does not discharge like a conventional battery. The following issues have been identified to be examined and addressed by the gtr:

(a) Characteristics of hydrogen as a fuel differ from conventional vehicle fuels.

(b) Characteristics of hydrogen storage differ from storage of other fuels:

(i) high pressure (up to 70Mpa);

(ii) cryogenic liquid (complexity of cooling and venting);

(iii) metal and chemical hydrides (thermal management for charging and discharging H, high pH waste);

(iv) ageing.

(c) Characteristics of fuel cells as high voltage electrical devices differ from conventional auto batteries:

(i) high voltage operation (up to 400V);

(ii) electrical isolation.

## 2. Research and Testing

13. The objective of the research is to provide the technical basis for developing the gtr for hydrogen vehicles. At the component level, stakeholders conducted and evaluated bonfire, burst, and pressure recycling tests to determine adequacy of proposed requirements for hydrogen on-board containers. Along with these tests, additional testing has been conducted to evaluate safety performance of thermal and pressure activated pressure relief devices and thermal and electrical management systems for tanks, fuel cells, and batteries, purging of fuel cell lines, etc. Still, more testing should be done to better understand ignitability and flammability through controlled releases of hydrogen and electrical arc at various severed locations in tubing between on-board storage tanks and fuel cell stack. Extensive testing is also merited to examine if external debris or matter can cause ignition of venting hydrogen. Additional work should be also performed to evaluate onboard refuelling performance and to evaluate for potential leakage from vehicle or fuelling system interface.

14. On the full vehicle level, tests have been conducted to determine overall crashworthiness and integrity. During operation and while parked, hydrogen leakage and concentrations inside and outside the vehicle should be measured over time, as well as testing of the passive and active ventilation systems, with a specific emphasis on the performance of the recovery or conversion systems to remove hydrogen. Research and testing have been done to evaluate electrical isolation of the fuel cell, cooling system and auxiliary batteries to determine electrical isolation of the entire high voltage system in pre-crash and post-crash scenarios. Supplementary evaluation of post-crash, especially for emergency medical services, is recommended to determine any special post-crash handling requirements for occupants, rescue personnel, towing service or disposal.

## 3. Outline of gtr

15. Finally, dedicated discussion concluded that the gtr covers fuel cell (FC) and internal combustion engine (ICE), compressed gaseous hydrogen ($CGH_2$) and liquid hydrogen ($LH_2$) in Phase 1. The application of the GTR is for passenger vehicles and three main areas outlined in the Action Plan have been discussed and included in gtr text, these are fuel system integrity, electrical safety, and hydrogen storage system.

16. Discussion of HFCV-SGS and Task Force meetings:

(a) 1st meeting took place in September 2007 in Bonn.

At the initial meeting, the group developed and agreed on the Terms of Reference for the gtr development.

(b) 2nd meeting took place in January 2008 in Geneva

SGS began to discuss the overall features of the gtr and its scope. SGS also discussed the high pressure containers and container - storage assembly, hydrogen leakage and its detection.

(c) 3rd meeting took place in May 2008 in Washington, D.C.

SGS discussed in general the structure, scope and application of the gtr. Some delegates proposed including 2- and 3- wheeled vehicles, but requirements for those vehicles will be developed in Phase 2. Also discussed were vehicle fuel system integrity and the integrity of hydrogen containers, mainly for the compressed gaseous hydrogen. BMW presented a proposal on requirements for liquefied hydrogen vehicles.

(d) 4th meeting took place in September 2008 in Tokyo

Discussions and presentation on container bonfire test, FC bus and passenger vehicles, container development, and the overall storage system, vehicle fuel system integrity and electric safety.

(e) 5th meeting took place in January 2009 in Budapest

Discussions on definitions, vehicle fuel system integrity, pressure relief devices and their discharge direction, leakage limit for enclosed areas within the vehicle; leakage limits for the exhaust outlet. SGS held an extensive discussion on the need and requirements for telltale. Also discussed, were post crash, electric safety,

(f) Drafting Task Force meeting took place in April 2009 in Frankfurt

The TF made a significant progress in identifying critical issues that need to be included in the gtr and proposed draft language, which was later adopted by SGS.

(g) 6th meeting took place in May 2009 in Beijing

SGS discussed hydrogen permeation, comparison of integrity of different hydrogen containers for gaseous compressed gas, and demonstration/testing protocols of container integrity.

(h) 7th meeting took place in September 2009 in Ottawa

SGS discussed the changes discussed and proposed by the Task Force. SGS also focused on resolving several key issues, namely, the number of cycles, initial burst pressure and of the storage system. Also discussed by the group were the differences between the hydraulic and pneumatic testing and leak permeation concerns.

(i) 8th meeting took place in January 2010 in Geneva

The two main topics of the discussions in Geneva were overpressurization of the downstream, which some delegation felt strongly about as deemed critical in order to ensure integrity of the system. SGS resolved this by developing a performance-based requirement; and the airtightness test for fuel lines. This issue, on which SGS was unable to reach a consensus, was resolved by agreeing in principle on a requirement describing an objective and reasonable test. Also resolved were the four types of containers that can be used for on-board storage of hydrogen.

(j) 9th[th] meeting took place in June 2010 in Seoul

SGS discussed the issue of testing hydrogen containers' integrity; specifically, the number of cycles representative of the life span of containers given the difference in vehicles and their uses. SGS also discussed the issue of including in the gtr the requirements for individual components that are deemed safety-critical, such as PRDs, maximum fueling pressure, and testing that is needed to validate several of the requirements.

(k) 10th meeting took place in September 2010 in San Francisco

SGS discussed need for validation tests for material compatibility of containers and requirements for individual components. The group continued to discuss the liquid hydrogen requirements, specifically, the storage and refueling. Most contracting parties felt that they were not ready for adoption of the liquid hydrogen portion of the gtr, but there is a general agreement that the issue will be addressed in further discussion and perhaps also in Phase2.

(l) Drafting Task Force meeting took place in November 2010 in Berlin

SGS discussed the BMW proposal for liquid hydrogen vehicles, electric safety, container composition, and TPRD performance.

(m) 11th meeting took place in February 2011 in Brussels

Main issues discussed were the engulfing fire duration. The United States wanted to extend the time to 10 minutes, based on data presented earlier by Japan and SAE; the group however did not agree. Germany proposed to adopt a shorter time but discuss this issue in Phase 2. OICA proposed a component test for environment exposure. Drop and vibration tests were also discussed. SGS also discussed developing fuelling receptacle requirements. Another topic was the reduction of the allowable concentration from 4 per cent to 2 per cent. The United States argued that an additional margin of safety is needed to address the potential that random spot concentration of hydrogen could be higher than 4 per cent. Next topic was the liquid hydrogen container and post crash requirements.

Many of the Contracting Parties are not prepared to adopt the LH2 section, but will not object to the inclusion of this section in Phase 1. The container material compatibility was also discussed but in the absence of consensus, deferred to Phase 2. SGS discussed electrical safety issues, particularly such as electric shock protection.

(n) 12th meeting took place in June 2011 in Paris

These main issues were: material compatibility, liquefied hydrogen system, electric safety and the engulfing, bonfire and localized fire tests. Another important issue is timing of the completion of the gtr. Based on the feedback from several contracting parties that are in the process of validating additional test procedures, the submission of the draft gtr as informal document to GRSP may be delayed until WP.29, June 2012. The co-sponsors, Germany, Japan and the United States, will continue their discussions with other Contracting Parties and participants to accelerate the work to complete it in a timely manner but an agreement has been made in SGS that we will not rush to the completion at the expense of submitting a robust gtr.

(o) Task Force meeting took place in November 2011 in Mainz

SGS concluded the Phase 1 with agreeing to present a draft gtr to the GRSP for discussion.

All documents related to HFCV-SGS informal meetings are available on following UN website: https://www2.unece.org/wiki/pages/viewpage.action?pageId=3178603

## F. Benefits and costs

16. At this first stage, the gtr does not attempt to quantify costs and benefits. While the goal of the gtr is to enable increased market penetration of HFCVs, the resulting rates and degrees of penetration are not currently known or estimable. Therefore, a quantitative cost-benefit analysis was not possible.

17. Some costs are anticipated from greater market penetration of HFCVs. For example, building the infrastructure required to make HFCVs a viable alternative to conventional vehicles will entail significant investment costs for the private and public sectors, depending on the country. Especially in the early years of HFCV sales, individual purchasers of HFCVs are also likely to face greater costs than purchasers of conventional gasoline or diesel vehicles, the same goes for manufacturers of new HFCVs (However, costs incurred by HFCV purchasers and manufacturers would essentially be voluntary, as market choice would not be affected).

18. While some costs are expected, the Contracting Parties believe that the benefits of gtr are likely to greatly outweigh costs. Widespread use of HFCVs, with the establishment of the necessary infrastructure for fuelling, is anticipated to reduce the number of gasoline and diesel vehicles on the road, which should reduce worldwide consumption of fossil fuels. Perhaps most notably, the reduction in greenhouse gas and criteria pollutant emissions (such as $NO_2$, $SO_2$, and particulate matter) associated with the widespread use of HFCVs is anticipated to result in significant societal benefits over time by alleviating climate change and health impact costs. The gtr may also lead to decreases in fuelling costs for the operators of HFCVs, as hydrogen production is potentially unlimited and expected to become more cost-effective than petroleum production for conventional vehicles. Furthermore, decreased demand for petroleum is likely to lead to energy and national security benefits for those countries with widespread HFCV use, as reliance on foreign oil supplies decreases. Additionally, although not attributable to this gtr, the gtr may create benefits in terms of facilitating OEM compliance with applicable fuel economy and greenhouse gas emission standards by promoting a wider production and use of HFCVs.

19. The Contracting Parties have also been unable to estimate net employment impacts of the gtr. The new market for innovative design and technologies associated with HFCVs may create significant employment benefits for those countries with ties to HFCV production. On the other hand, employment losses associated with the lower production of conventional vehicles could offset those gains. The building and retrofitting of infrastructure needed to support hydrogen production and storage is likely to generate net additions to the job market in the foreseeable future.

# Annex IV

## Draft amendments to Regulation No. 16

### Amendments adopted to ECE/TRANS/WP.29/GRSP/2012/20 (see para. 22 of this report)

*Paragraph 6.2.5.3.2.*, amend to read:

"6.2.5.3.2. When tested in accordance with paragraph 7.6.2., an emergency locking retractor … direction of unreeling is not less than **3.0** g."

***Annex 13*, amend to read:**

"

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **6.2.5.2.2./6.2.5.3.4./ 7.6.4.** | **Retracting force** | **X** | **X** | | | | | | | | | | | | | | |

"

### Adopted text based on GRSP-52-26 (see para. 24 of this report)

*Paragraph 7.6.2.2.*, correct to read:

"7.6.2.2 On trouve à l'annexe 4 du présent Règlement la description d'un appareillage convenant aux essais indiqués au paragraphe 7.6.2.1. Cet appareillage d'essai doit être conçu de telle sorte que l'accélération prescrite soit atteinte **avant que la sangle ne se soit déroulée du rétracteur de plus de 5 mm et** avec un taux moyen d'accroissement initial d'au moins 55 g/s [8] et d'au plus 150 g/s [8] pour l'essai de sensibilité au déroulement de la sangle et d'au moins 25 g/s [8] et d'au plus 150 g/s [8] pour l'essai de sensibilité à la décélération du véhicule [8]."

# Annex V

## Draft amendments to Regulation No. 44

### Amendments adopted to ECE/TRANS/WP.29/GRSP/2012/21 (see para. 31 of this report)

…

*Insert new paragraphs 6.2.2.1. and 6.2.2.2.*, to read:

"6.2.2.1. With the crotch … approval.

6.2.2.2. During the dynamic test, as prescribed in paragraph 8.1.3., the lap belt shall **not pass fully beyond the pelvic** structure of the dummy, during the period prior to maximum horizontal head excursion. Assessment shall be carried out using high speed **video imaging**."

…

*Paragraph 7.1.3.1.*, amend to read

"7.1.3.1. The child restraint shall be tested as prescribed in paragraph 8.1.2.; **at no point** during the whole test **shall the manikin be fully ejected from the device**, **in addition** when the test seat is in the upside down position the manikin's head shall not move more than 300 mm from its original position in a vertical direction relative to the test seat."

***Paragraph 8.1.2.1.*, amend to read:**

"**8.1.2.1. The manikin shall be …paragraph 8.1.3.6. below, applied for all systems identically.**"

…

*Insert new paragraphs 8.1.2.3.* to 8.1.2.5., to read:

"8.1.2.3. At this static inverted position **a mass** equivalent to **4** times that of the dummy shall be applied vertically downwards in a plane perpendicular to the axis of rotation in addition to the dummy utilizing the load application device described in Annex 23. The load shall be applied **in a gradual controlled manner at a rate not exceeding gravitational acceleration or 400 mm/min.** Maintain the prescribed maximum load for a duration of **30 -0/+5 seconds.**

8.1.2.4. Remove the load at a rate not exceeding **400** mm/min and measure displacement.

8.1.2.5. Rotate the whole seat for 180° to return to the starting position."

…

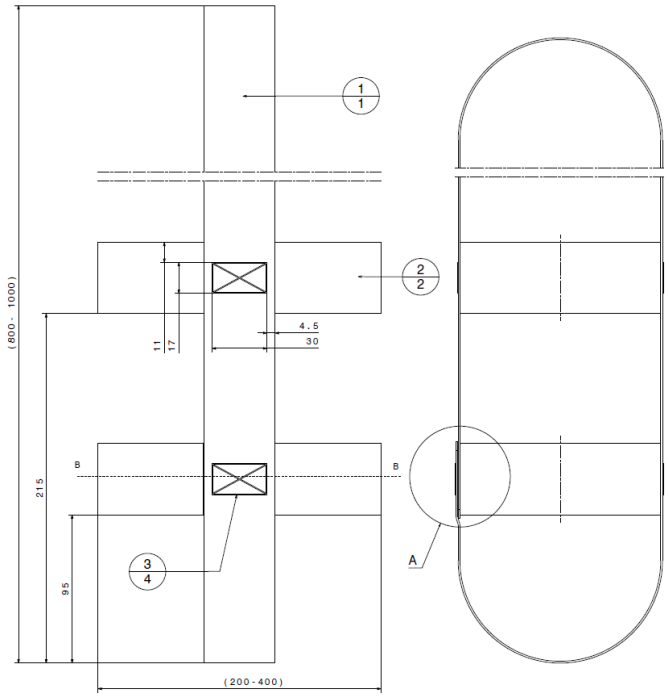
*Insert a new Annex 23*, to read:

## "Annex 23

Load application device **I (to be used for Group 0 / 0+ products)**

...

## Load application device II (to be used for Group 1)

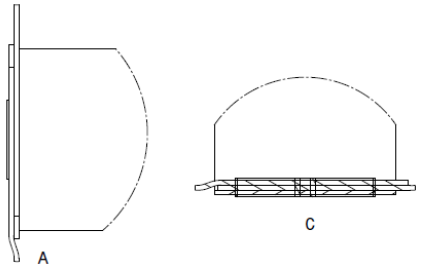


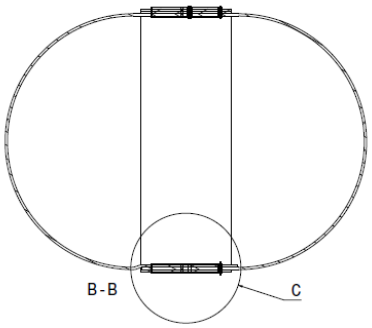

| No. | Name | Information | Quantity |
|---|---|---|---|
| | | | |
| 1 | main belt - 39mm | - | 1 |
| 2 | hip belt (upper/lower) - 39mm | - | 2 |
| 3 | stitch pattern (30x17) | stich: 77, thread: 30 | 4 |

| **strech lenght** | **(+/-5mm)** | | | | | |
|---|---|---|---|---|---|---|
| | *Dummy P/Q 0* | *Dummy P/3/4* | *P/Q 1,5* | *P/Q 3* | *P/Q 6* | P/Q 10 |
| main belt | 1600mm | 1600mm | 1600mm | 2000mm | 2000mm | 2000mm |
| hip belt | 440mm | 540 | 640mm | 740mm | 740mm | 840mm |

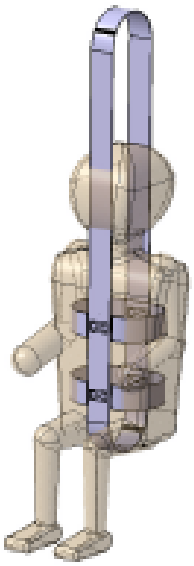
| *stich pattern* | *min. required force* |
|---|---|
| 12x12mm | 3,5 kN |
| 30x12mm | 5,3 kN |
| 30x17mm | 5,3 kN |
| 30x30mm | 7,0 kN |

*all belt radius* = 5mm




Top view
Scale:1:2



Isometric view
Scale:1:10

"

# Annex VI

## Draft amendments to Regulation No. 95

### Amendments adopted to ECE/TRANS/WP.29/GRSP/2012/17 (see para. 40 of this report)

*Insert new paragraphs 5.3.2. to 5.3.2.2.2.*, to read:

…

"5.3.2. After …unlocked.

~~[~~5.3.2.1. In the case … the doors **shall ~~[~~**be locked before the moment of impact and~~]~~ be unlocked after the impact at least on the non-struck side.~~]~~

…"

…

# Annex VII

## Revised terms of reference for the new informal working group on Rechargeable Energy Storage Systems

### Adopted text based on GRSP-52-05 (see para. 42 of this report)

The modification to the previous terms of references adopted by WP.29 with the report of the forty-ninth GRSP session (see ECE/TRANS/WP.29/1093 para. 35), are marked in bold for new or strikethrough for deleted characters.

**A. Introduction**

**1. REESS requirements for vehicles of category M and N**

1. GRSP agreed to set up a group of interested experts to establish legal requirements for Rechargeable Energy Storage Systems (RE**E**SS).

2. Therefore the World Forum agreed to extend the mandate of the Electric Safety informal group (ELSA) to cover these new activities through a group of interested experts, instead of establishing a new informal group under GRSG (s. report of 151th session WP.29 in June 2010, ECE/TRANS/WP.29/1085).

3. The informal group on Electric Safety (ELSA) deals with safety requirements under the 1998 Agreement. While it was agreed that the RE**E**SS component and system requirements are part of the Type Approval Process under the 1958 Agreement ELSA decided on its eighth meeting to start the business in a separate subgroup.

4. In a first step the group consider~~s~~**ed** requirements for RE**E**SS in vehicles of categories M and N. In a second step the group may consider also requirements for RE**E**SS in vehicles of category L and development of a new global technical regulation (gtr) under the 1998 Agreement. **In between WP.29 agreed to install a new informal working group EVS. It is the assignment of the group to develop requirements regarding electric vehicle safety under the 1998 Agreement. Therefore, development of a GTR is no longer a task of the REESS group.**

**2. "In-use" and REESS requirements for vehicles of category L**

**5. GRSP decided in the May 2012 session to define "in-use" and REESS requirements for vehicles of category L. This has to be done by the REESS group under GRSP.**

**6. Therefore the group has to consider aligning the requirements of UNECE Regulation No. 100 to vehicles of category L.**

**B. Objective of the proposal**

**1. Objectives regarding vehicles of category M and N**

7. Ensure safety of rechargeable energy storage systems (RE**E**SS) which provide electric energy for electrical propulsion installed in vehicles of categories M and N during normal operation, unusual circumstances and post-crash.

8. For that purpose existing regulations if possible and practicable under 1958 agreement should be amended for RE**E**SS requirements concerning their functional, mechanical, chemical and electrical safety. Details of the issues to be tackled by the group are laid down in **Appendix 1**.

9. An approach for approval of components and systems (e.g. Regulation No. 28) should be achieved. Existing regulations and standards (e.g. IEC, ISO) will be considered.

**2. Objectives regarding vehicles of category L**

**10. Define the reasonable extension of the before mentioned requirements in paragraph 1.2 above to vehicles of category L, together with any new safety requirements whether the group treats it as necessary.**

**11. The work will be performed in two steps:**

**(a) In a first step the "in-use" requirements for vehicles of category L on the basis the existing requirements for categories M and N have to be defined.**

**(b) In a second step the same has to be done for REESS requirements.**

**C. Operating principles**

**12. Participants to include Contracting Parties, Vehicle Manufacturers and Suppliers, Technical Services, Electric Safety Experts, etc.**

**13. The group will be chaired by Germany, secretary will be provided by OICA.**

**14. The official language of the group will be English.**

**15. All documents will be posted on the website https://www2.unece.org/wiki/pages/viewpage.action?pageId=3178625 in advance of the meetings. The group may postpone discussing any item or proposal which has not been circulated 10 working days in advance of the scheduled meeting.**

**16. Proposals will be developed by consensus. When consensus cannot be reached, the Chair shall present the different points of view to GRSP. The Chair may seek guidance from GRSP as appropriate.**

**17. Sessions shall be held in agreement with the majority of the participants after the group has been established in a constitutional meeting.**

**18. A provisional agenda shall be drawn up by the secretariat in accordance with the participants of the group. The first item upon the provisional agenda for each session shall be the adoption of the agenda.**

**19. The second item on the provisional agenda will be the discussion, matters arising and adoption of the minutes of the previous session.**

**D. Work plan and schedule**

| | |
|---|---|
| November 2010 | Constitutional meeting, ToR to GRSP (informal document) |
| December 2010 | Adoption of ToR by GRSP |
| January 2011 | Second meeting of the REESS group |
| March/April 2011 | Third meeting of the REESS group |
| May 2011 | Progress-Report to GRSP |
| June 2011 | Fourth meeting of the REESS group |

| | |
|---|---|
| October 2011 | Fifth meeting of the REESS group |
| January 2012 | Sixth meeting of the REESS group |
| February 2012 | Working Document to GRSP |
| Mai 2012 | Adoption by GRSP |
| October 2012 | Seventh meeting of the REESS group |
| November 2012 | Adoption by WP.29 |
| **December 2012** | **Adoption of updated ToR by GRSP (informal document)** |
| **January 2013** | **Eighth meeting of REESS** |
| **March 2013** | **Adoption by WP.29 of updated ToR** |
| **May 2013** | **Ninth meeting of REESS** |
| **May 2013** | **Progress Report to GRSP** |
| **September 2013** | **Tenth meeting of REESS** |
| **December 2013** | **GRSP consider informal document of REESS group** |
| **January 2014** | **Eleventh meeting of REESS group** |
| **Mai 2014** | **GRSP approve working document of REESS group** |
| **November 2014** | **Adoption by WP.29** |

**Appendix 1**

**Candidate Requirements**

1. **Vibration**
2. **Thermal Shock**
3. **Humidity / Moisture Exposure**
4. **Mechanical Shock**
5. **Fire Resistance**
6. **External Short Circuit**
7. **Overcharge Protection (REESS or via vehicle system)**
8. **Over-discharge Protection**
9. **Over-temperature Protection**
10. **Protection against direct contact**
11. **Emission**

# Annex VIII

**[English only]**

## List of GRSP informal working groups

| *Informal working group* | *Chair* | *Expiry date of the mandate [pending WP.29 decision]* | *Secretary* |
|---|---|---|---|
| Frontal Impact (FI) | Mr. Pierre Castaing<br>Phone : +33 1-69801750<br>Fax : +33 1-69801719<br>Email : pierre.castaing@utac.com | December 2014 | |
| Harmonized side impact dummies | Ms. Mary Versailles<br>Phone : +1 202 366 20 57<br>Fax : +1 202 493 29 90<br>Email : mary.versailles@dot.gov | [December 2015] | |
| Head Restraints (GTR7-Phase 2) | Mr. Bernard Frost<br>Phone : +44-(0)207 9442107<br>Fax : +44-(0)207 9449623<br>Email : bernie.frost@dft.gsi.gov.uk | December 2013 | OICA |
| Hydrogen and fuel cells subgroup safety (SGS) | Mr. Kazuyuki Narusawa<br>Phone : +81 4-22413218<br>Fax : +81 4-22768604<br>Email : narusawa@ntsel.go.jp | Expired | USA |
| Child Restraint Systems (CRS) | Mr. Pierre Castaing<br>Phone : +33 1-69801750<br>Fax : +33 1-69801719<br>Email : pierre.castaing@utac.com | December 2014 | |
| Pedestrian Safety (GTR9-Phase 2) | Mr. Richard Damm<br>Tel.: +49 (0) 228 99 300 4302<br>Fax: +49 (0) 228 99 300 807 4302<br>Email: richard.damm@bmvbs.bund.de | [June 2014] | |
| Pole Side Impact (PSI) | Mr. Robert Hogan<br>Phone : +61 2 62 74 72 66<br>Fax : +61 2 62 74 74 77<br>Email : robert.hogan@infrastructure.gov.au | March 2014 | |
| Electric Vehicle Safety (EVS) | Mr. N. Nguyen, (vice-chaired by the European Union and China)<br>Phone: +1 202 366 69 34<br>Fax: +1 202 493 29 90<br>Email : nha.nguyen@dot.gov | [December 2014] | Japan |
| Rechargeable Energy Storage Systems (REESS) | Mr. G. Kellermann<br>Phone : +49 228 300 43 04<br>Fax : +49 228 300 807 43 04<br>Email : gerd.kellermann@bmvbs.bund.de | [November 2014] | [IMMA] |