



Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Lighting and Light-Signalling

Seventy-sixth session

Geneva, 25 – 28 October 2016

EXTRACT FOR IWG VGL of the Report of the Working Party on Lighting and Light-Signalling on its seventy-sixth session

B. Other proposals for amendments to Regulation No. 48

Documentation: Informal documents GRE-76-19 and GRE-76-20-Rev.1

21. The expert from Poland, in his capacity of Chair of the Informal Working Group on Visibility, Glare and Levelling (IWG VGL), reported on the IWG activities (GRE-76-19). The expert from OICA, Secretary to IWG VGL, proposed to modify the Terms of Reference (ToR) of IWG VGL (GRE-76-20-Rev.1). GRE adopted the revised ToR, as laid down in Annex III to the report.

Annex III

Revised Terms of Reference and Rules of Procedure for the ‘Informal Working Group on Visibility, Glare and Levelling (IWG VGL)’

I. Introduction

1. At its sixty-fifth session, GRE considered ECE/TRANS/WP.29/GRE/2011/27, introducing mandatory automatic levelling for headlamps (superseding ECE/TRANS/WP.29/GRE/2011/2 and ECE/TRANS/WP.29/GRE/2011/22). The proposal received comments from the experts of GTB (GRE-65-03 and GRE-65-17) and OICA (GRE-65-16) among others. The expert from Poland presented ‘Analysis of the influence of aiming, on visibility distance and glare’ (GRE-65-30) concerning important aspects of present state of aiming/levelling in Regulation No. 48.
2. GRE adopted ECE/TRANS/WP.29/GRE/2011/27, as amended by Annex IV to this report. GRE agreed that this adoption was subject to the development of a further proposal to be prepared by the expert from GTB who would lead a comprehensive study of the whole issue of glare and visibility during night-time driving. Accordingly, it was agreed in case the results of the study revealed alternatives to the adopted mandatory requirements for automatic levelling and cleaning, the provisions of Regulation No. 48 would be re-examined at any time during the 90-month transitional period provided by ECE/TRANS/WP.29/GRE/2011/27. It was further agreed that, while the study would be managed by a dedicated working group based on the GTB structure, participation would be open to any GRE expert wishing to contribute. The secretariat was requested to submit ECE/TRANS/WP.29/GRE/2011/27 to WP.29 and AC.1 at their November 2011 sessions as draft [06] series of amendments to Regulation No. 48 (ECE/TRANS/WP.29/GRE/65, para. 17).
3. At its 155th session, WP.29 agreed to defer consideration of document ECE/TRANS/WP.29/2011/99 and Corr.1 to its June 2012 session, subject to a final review by GRE at its March 2012 session (ECE/TRANS/WP.29/1093, para. 55).
4. At its 156th session, WP.29 agreed to defer consideration of the amendments to Regulations under agenda items 4.16.1 to 4.16.3 to the next session of WP.29 (ECE/TRANS/WP.29/1093, para. 79).
5. At its 157th session, WP.29 also agreed to refer back the documents of agenda item 4.14.2 to GRE for its further consideration. In this respect, the EU requested a cost/benefit analysis (ECE/TRANS/WP.29/1097, para. 55).
6. In conjunction with the further consideration in GRE, GTB (Groupe de Travail “Bruxelles 1952”) established a Task Force on Coordination of Automotive Visibility and Glare Studies (TF CAVGS). The tasks of TF CAVGS were defined as follows: project management and quality control of activities by GTB working groups in relation to automotive visibility and glare studies; informal communication with GRE, OICA and CLEPA through liaisons in this TF, optional collaboration with SAE and CIE through liaisons; communication via GTB to GRE and to a publicly-accessible section on the GTB web site.
7. In the meantime, the expert from Poland prepared for all consecutive GRE sessions, formal and informal documents with proposals based on the basic analysis of photometry and geometry with explanations according GRE comments and suggestions (ECE/TRANS/WP.29/GRE/2011/32 (initial Polish proposal for aiming/levelling tolerance

connected with objective road illumination distance of 75m +/- 25 m), GRE-66-17, ECE/TRANS/WP.29/GRE/2012/21, GRE-67-33, GRE-67-37, ECE/TRANS/WP.29/GRE/2012/27, GRE-68-31, GRE-68-32, GRE-68-34, ECE/TRANS/WP.29/GRE/2013/15, GRE-70-41, ECE/TRANS/WP.29/GRE/2013/57 and ECE/TRANS/WP.29/GRE/2014/11 (coming back to the values in the initial Polish proposal)). The Polish proposals aimed to guarantee the minimum range of illuminated road while ensuring the avoidance of glare regardless of the historical requirements oriented to the design.

8. At the seventy-first session of GRE, the experts from GTB presented the outcome of a study on visibility and glare of automotive low beam headlamps (GRE-71-32). The study concentrated on levelling in relation to load. The major objectives of the study were to improve the understanding of different factors that influence visibility and glare and to identify results of the study that might reveal alternatives for automatic static levelling. According to the GRE suggestion, it also included the studies done by Poland (GRE-71-32). The resulting proposal for amendments to Regulation No. 48 based on this study was presented to the seventy-second session of GRE (GRE-72-07).

9. At its seventy-third session, GRE considered a joint proposal by the experts from the International Organization of Motor Vehicle Manufacturers (OICA) and GTB to introduce new criteria on the automatic levelling of headlamps based on the GTB glare and visibility studies (ECE/TRANS/WP.29/GRE/2015/5). The expert from Poland suggested further modifications to this proposal (GRE-73-18 and GRE-73-28). The experts from Germany and Japan proposed to impose automatic levelling in all cases, in order to reduce glare problems for drivers (GRE-73-17). Following an in-depth exchange of views on these three documents, GRE realized that no consensus could be found as long as there was no single proposal.

10. To proceed with this issue and prepare an encompassing proposal, GRE decided to establish an Informal Working Group with a draft title 'on Visibility, Glare and Levelling' (IWG VGL), for which the experts from Germany and Poland agreed to act as Chair and Secretary, respectively. GRE requested IWG VGL to submit its terms of reference for consideration at the next session of GRE and mandated the Chair to obtain, in June 2015, the consent of WP.29 for the establishment of this IWG (ECE/TRANS/WP.29/GRE/73, paras. 17 and 18).

11. During the 166th session of WP.29, AC.2 considered the possibility of establishing an IWG. Germany expressed its interest to chair the group, Poland to be Vice-Chair and OICA the secretary. WP.29 was requested to provide advice on this issue (ECE/TRANS/WP.29/1116, para. 12). WP.29 noted that, to prepare a consolidated proposal on new criteria for the automatic levelling of headlamps, GRE decided to establish a new Informal Working Group on Visibility, Glare and Levelling (IWG VGL). WP.29 gave its consent for establishing this IWG (ECE/TRANS/WP.29/1116, para. 25).

12. At the same session of WP.29, the representative of France proposed to delete a design restrictive requirement in Regulation No. 48 for auto-levelling of headlamps equipped with any Light Emitting Diodes (LED) light sources (ECE/TRANS/WP.29/GRE/2015/21, ECE/TRANS/WP.29/GRE/73 and WP.29-166-23). The representative explained that, if LEDs were treated the same way as other light sources, more LED headlamps would be fitted on new vehicles, and thus improving road safety and reducing CO₂ emissions. WP.29 noted that recent studies indicate that the type of light source does not seem to be a major factor of headlamp glare, and that GRE had established an IWG to review all levelling requirements in Regulation No. 48. The EU representative stressed that for this subject OLA should also be involved to provide their analysis and preferred option.

13. WP.29 stressed that, in line with the text and spirit of the 1958 Agreement, Regulations should be technologically neutral and performance based. Therefore, WP.29 advocated the French proposal and invited GRE to adopt it and to submit it to WP.29 for

consideration. WP.29 also pointed out the importance of the newly established IWG for finding a general solution for glare and visibility issues. WP.29 also instructed IWG and GRE to verify, as a matter of priority, that LED headlamps do not produce more glare compared to other light sources, to review all levelling requirements and to report back to WP.29 (ECE/TRANS/WP.29/1116, paras. 50 and 51).

14. At its seventy-fourth session, GRE reverted to the proposal by the expert from France to delete a design restrictive requirement in Regulation No. 48 for an auto-levelling device for low beam produced by light emitting diodes (LED) light sources (ECE/TRANS/WP.29/GRE/2015/21 and ECE/TRANS/WP.29/GRE/73, para. 20). The secretariat informed GRE about the discussion on this issue at the June 2015 session of WP.29. The World Forum had stressed that Regulations should be technologically neutral and invited GRE to adopt the French proposal and to submit it to WP.29 for consideration (ECE/TRANS/WP.29/1116, paras. 50 and 51).

15. GRE was not in a position to reach a consensus on this matter. The experts from Germany and Japan did not support the French proposal and suggested that it first be referred to the Informal Working Group on Visibility, Glare and Levelling (IWG VGL) and considered in one package with various other proposals. The experts from Belgium, Finland, France, Italy, Spain, EU, CLEPA and OICA supported the French proposal and called for its adoption independent of the IWG VGL activities. The experts from Austria and Poland reserved their positions. Finally, in view of the WP.29 guidance, GRE agreed to adopt the proposal in ECE/TRANS/WP.29/GRE/2015/21 and to submit it to the March 2016 session of WP.29 for a final decision. The Chair was also requested to brief WP.29 on the different views expressed by experts in GRE (ECE/TRANS/WP.29/GRE/74, paras. 14 and 15).

16. WP.29 and AC.1, at their March 2016 sessions, adopted the GRE proposals for amendment to Regulation No. 48 to introduce the same 2,000 lm criterion for all light source, including LED, for deciding which type of levelling device has to be installed on the vehicle (Supplement 16 to the 04 series of amendments, Supplement 9 to the 05 series of amendments and Supplement 7 to the 06 series of amendments; documents ECE/TRANS/WP.29/2016/20, ECE/TRANS/WP.29/2016/19 and ECE/TRANS/WP.29/2016/18, respectively). However, other amendments to Regulation No. 48 on headlamp levelling still need to be considered. For instance, the limit value of 2,000 lm for light source luminous flux is currently used to determine the need for automatic levelling.

17. The Terms of Reference of IWG VGL were adopted at the March 2016 session of WP.29 (Annex 3 to ECE/TRANS/WP.29/GRE/74). In view of the above, after two meetings, IWG VGL deems necessary to update its Terms of Reference, including the work plan and time schedule.

II. Objectives

18. The following Terms of Reference describe the principle tasks of the new IWG focusing at the development of proposals for the amendment to UN Regulations to reduce and possibly solve the visibility and glare concerns deriving from vehicles and headlamps characteristics and performances.

19. IWG VGL shall:

- (a) As a first step, define a provisional solution for visibility and glare issues, by means of an amendment to Regulation No. 48 for vehicles of categories M and N for the headlamp levelling requirements;
- (b) Develop suitable criteria and a test procedure to evaluate the headlamp levelling performances;

- (c) Consider a cost/benefit analysis and an impact assessment on the proposed requirements;
 - (d) Define suitable transitional provisions for the introduction of the proposed requirements.
20. The amendment shall be prepared mainly taking into account the proposals and studies on this specific matter already presented in GRE.
21. For preparation of the proposals, the following issues influencing visibility and glare shall be taken into consideration:
- (a) The relevant general data such as roads characteristics, standard use of vehicles, etc. explaining the different situations of glaring and the critically situations with regard to visibility (including the amount of light projected in the area where the eyes of an oncoming vehicle's driver are located);
 - (b) The relevant parameters for installation of headlamps with regard to visibility and glare, such as:
 - (i) initial aiming of the headlamps;
 - (ii) levelling of the passing beam based on the cut-off position;
 - (iii) mounting height of the headlamps, with a clear definition of the reference condition;
 - (iv) ergonomic aspects such as accessibility of manual levelling device, etc.;
 - (v) other parameters.
22. According to the discussions and results of this phase, additional research and studies related to visibility and glare issues could be found necessary for taking into consideration:
- (a) Categories of vehicles;
 - (b) Headlamp beam pattern and related distribution of the light/illumination intensity;
 - (c) Future technologies for illuminating systems (new light sources, adaptation of the light distribution, etc.);
 - (d) Future technologies for vehicles (levelling systems, automatic lights control, autonomous driving, etc.);
 - (e) Any other, if needed.

III. Rules of Procedure

23. The Informal Working Group on Visibility, Glare and Levelling (IWG VGL) is a subgroup of GRE and is open to all participants of GRE, including Contracting Parties to the 1958 and 1998 Agreements and non-governmental organizations. However, it is recommended that a maximum of three technical experts per country and organization participate in this group.
24. IWG will be chaired by Poland. OICA will act as Secretary.
25. The official language of the group will be English.
26. An agenda and related documents shall be made available on the dedicated UNECE website (www2.unece.org/wiki/pages/viewpage.action?pageId=26903055) by the Secretary of the group in advance of all scheduled meetings.

27. All documents and/or proposals shall be submitted to the Secretary of the group in a suitable electronic format in advance of the meetings. The group may postpone discussing any item or proposal which has not been circulated five working days in advance of the scheduled meeting.
28. The Secretary of the group shall distribute the draft meeting minutes to the informal group members within fifteen working days after the meeting of the group. The draft minutes shall be considered and adopted at the next session of IWG. The adopted minutes shall be submitted to GRE and will be used by the IWG Chair as a basis for reporting to GRE about the activities of the IWG.
29. IWG shall develop its opinions and draft proposals by consensus, and submit these to GRE for further consideration and decision. If IWG cannot reach common agreement on particular items or proposals, the Chair shall present the issue to the GRE and/or to WP.29 for resolution. The IWG Chair may seek guidance from GRE as appropriate.
30. Sessions shall be held in agreement with the majority of the participants after the group has been established in a constitutional meeting. Sessions may be in person or virtual using web-based technology.
31. A provisional agenda shall be drawn up by the Secretary in accordance with the proposals and requests received from the members of the group and with the agreement of the Chair. The first item upon the provisional agenda for each session shall be the adoption of the agenda.
32. The second item on the provisional agenda shall be the discussion on matters arising and adoption of the minutes of the previous session.
33. IWG shall provide GRE with status reports at each GRE session.

IV. Work plan and time schedule

34. IWG VGL will present to GRE informal documents for consideration at the seventy-sixth session in October 2016 and at the seventy-seventh session in April 2017.
35. According to the guidelines of GRE, IWG VGL will present a formal proposal for consideration at the seventy-eighth session of GRE in October 2017 and then for consideration at the 174th session of WP.29 in March 2018.
36. The timeline for future work, if needed, shall be proposed at the seventy-seventh session of GRE in April 2017.
37. Meetings of the group shall be scheduled to meet the above timeline.