

**ECONOMIC COMMISSION FOR EUROPE**  
INLAND TRANSPORT COMMITTEE  
World Forum for Harmonization of Vehicle Regulations (WP.29)  
Working Party on Lighting and Light-Signalling (GRE)  
Informal Group on Group on Visibility, Glare and Levelling (VGL)

## DRAFT REPORT OF THE 7<sup>th</sup> IWG VGL SESSION

to be held at the **OICA (Organisation Internationale des Constructeurs Automobile)**, Paris,  
from **Wednesday, 31<sup>st</sup> May at 09:30 to Thursday, 01<sup>st</sup> June 2017 at 16:30**

		Working Documents
<b>1.</b>	<b>Welcome and opening remarks</b>	
<b>2.</b>	<b>Introduction of participants and organisations</b>	VGL-07-02
The list of all participants is available in document VGL-07-02. Apologies: Mark Grainger, Tom Crauwels, Maria Del Mar Palacios Lopez, Michael Pernkopf, Luděk Piskač, Philipp Plathner, Walter Sclager, Pascal Vetter.		
<b>3.</b>	<b>Adoption of the agenda</b>	VGL-07-01
The agenda is adopted.		
<b>4.</b>	<b>Adoption of the report of the previous session</b>	VGL-05-11 VGL-06-05
The reports of the 2 last sessions of the IWG VGL are adopted.		
<b>5.</b>	<b>Feedback from the last GRE according to the presentation done by the chair of this group</b>	VGL-06-04 <a href="#">GRE-77-27</a>
The document presented at last GRE is shown especially with the last diagram. The loading and the process of loading have to be clarified before finalization of the diagram. A running order has been built to manage this session with: <ul style="list-style-type: none"> <li>- justifications of the diagram,</li> <li>- conditions and process for loading,</li> <li>- criteria of the decision for the type of levelling device to be used.</li> </ul>		
<b>6.</b>	<b>Justification to the proposed diagram:</b> <ul style="list-style-type: none"> <li>- <b>1<sup>st</sup> draft prepared by OICA</b></li> <li>- <b>Diagram revised during this 7<sup>th</sup> session</b></li> <li>- <b>Justification by the group from the OICA proposal</b></li> <li>- <b>Glare line from calculations of Tomasz Targosinski at 25m</b></li> </ul>	VGL-07-03 VGL-07-04 VGL-07-05 VGL-07-06
<b>Pauline Lejeune</b> presented a 1 <sup>st</sup> draft prepared by OICA (not available before the meeting because still in progress and need of recommendations by the group). Main comments according to the discussions:		

- A new order of the lines has been proposed to follow the logic during the building of the diagram Lines 2, 4, 1 & 3, 5.  
Lines 6 & 7 in support for the justification.  
The renumbering of the lines will be done at the end to avoid any confusion.
- Revision of the diagram with additional lines (**VGL-07-04**):
  - For reminder, the lines defined at previous sessions of the group = Lines 1, 2, 3, 4, 5 with support of line 6
  - New lines from this 7<sup>th</sup> session:
    - ✓ Line 7 built from the calculations made by Poland (**VGL-07-06**) to consolidate the line 2 by scientific approach (min. eye height of 0.94 m, cut-off not to be over eyes beyond 25 m, static conditions),
    - ✓ Line 8 as compromise between lines 4 and 5 – this will avoid the need for an exemption (line 3) → that will ensure a road illumination distance 37,5m
    - ✓ Line 9 as compromise in a potential simple way to ensure a road illumination distance at 40m
- **Line 2:**
  - Different opinions for using the justification based on the 1 lumen from the TC4-45 group –
  - **Tomasz Targosinski** done additional calculations for glare line 7 at 25m (assumed that the high luminous intensity from below cut-off will not touch eyes beyond 25m)) = **VGL-07-06** → 3<sup>rd</sup> way converging to justify the line 2
- **Line 4:** from scientific calculations to ensure the 50m visibility and to have the same prescription for any mounting heights
- **Line 1:** the 1 lumen concern has to be explained more with the help of **Tomasz Targosinski** of the TC4-45 group
  - Vertical line gives a safety margin against glaring
  - Discussions to move the line 1 from 0% to -0,2% - no decision - In this case, this will have an impact on line 3, requiring to move also this line 3 to keep the 1,6% of tolerance needed by Industry but the improvement for the visibility will be less significant
  - Lines 8 & 9 are linked with the current vertical line 1 – if line 1 changes then we will have to discuss again
  -
- **Line 3:**
  - Due to practical reasons, the it was proposed to have exemption from the line 4 to the line 3
  - The limits of the diagram that will be defined will be the absolute boundaries including the CoP tolerances
  - Explanation of the 1,6% (instead of the current 2%) from Industry, independently of the type of manual/automatic levelling device, vehicles at the end of plant (not in-use vehicles) including the power train behaviour – the different factors have to be specified: power train deviation, tyre deviation, chassis tolerances, headlamp adjustment tolerances, motor tolerances, material of the housing, settlement of the frontend, , vehicle's behaviour after 10km + again after additional 10km or after load/unload 150kg in trunk, cut-off stability, tank, leveller, reaction between left/right sides during type-approval according to the load, ... → still to be consolidated.
- **Line 8 (according to the current tendency of design / lower edge of apparent surface in comparison with the optical axis → 37,5m)/Line9 (40m):** as compromise to the lines 3 & 4 - could be supported by the Netherlands, Italy, France, Poland – Japan reminded that current Japanese standard requires 40m of visibility → to be checked by industry especially for vehicles with low mounting height headlamps

Result of the group for the justification from the OICA draft (VGL-07-03) → See **VGL-07-05**

**Conclusions:**

- **What should be the reference used = lower edge of apparent surface as today or optical axis? → even is performance and theoretical base the preference of most of group to move this issue for Stage 2**

**For next session:**

- **Justification to be consolidated with new order and including the new line 8/9**
- **Feedback from Industry for line 8/9**

<b>7.</b>	<b>Conditions and process for loading</b>	<b>VGL-07-08</b>
<ul style="list-style-type: none"><li>- GTB/OICA (<b>VGL-05-03</b>) and Polish (<b>VGL-03-14</b>) proposals are reminded with examples from Renault (<b>VGL-05-07</b>) and M.Targosinski (<b>VGL-07-08</b>)</li><li>- For Italy, France, the Netherlands and according to the different studies on use of vehicles already presented, the current Annex 5 is sufficient to assess the behaviour/variation of the pitch of the vehicle<ul style="list-style-type: none"><li>▪ The current scope is for vehicles of category M1 and N1 derived from M1 in static conditions</li><li>▪ Italy can support the principle to keep the Annex 5, nevertheless he cannot accept to continue with the current 6 loading cases for M1 vehicles because not realistic on statistic point of view and more severe than for the other vehicles propose to keep only 3 cases = case 1 (driver), case 2 (driver + front passenger) and something between cases 5 &amp; 6</li><li>▪ The Annex 5 allows to prove that the performances are reached</li></ul></li><li>- How to improve the use of the manual levelling device by the driver (ergonomics, visibility, accessibility, owner manual ...)? Concern expressed during the meeting by Poland and Japan → already includes in the stage 2 of the ToR – to be followed</li></ul> <p><b>Conclusion: Agreement of the group for keeping for the time being the current Annex 5, nevertheless Italy will make a counter-proposal to Annex 5 according to his concern and the discussions during the meeting</b></p>		

<b>8.</b>	<b>Criteria of decision for the type of levelling device</b>	<b>VGL-07-07</b>
<ul style="list-style-type: none"><li>- Several reminders done during the meeting:<ul style="list-style-type: none"><li>▪ GTB/OICA (<b>VGL-05-03</b> – pages 20/27/28) and Polish (<b>VGL-03-14</b>) proposals are reminded with examples from Renault (<b>VGL-05-07</b>) and Poland (<b>VGL-07-08</b>)</li></ul></li><li>- Glare complaints because initial aiming and/or bad use of levelling device?</li><li>- According to the discussions, <b>Tomasz Targosinski</b> proposed to delete the 2000lm criteria to select the type of levelling device and to let the carmakers responsible of the design of the vehicles to respect the tolerances regardless of the technology<ul style="list-style-type: none"><li>▪ Different <b>comments</b>:<ul style="list-style-type: none"><li>✓ What is really needed is to ensure the minimum illumination without glaring from requirements technologically neutral and based on performance</li><li>✓ The Annex 5 allows the check of the performance</li><li>✓ The new current diagram which is more stringent than the diagram currently into force</li><li>✓ Difficulty for OEMs to have accurate predictions of the behaviour of the vehicles (which do not yet physically exist when the technical definition has to be fixed) because a lot of variants according to the power train, the suspension, springs, ...</li></ul></li></ul></li></ul>		

	<ul style="list-style-type: none"> <li>✓ No proven safety issues because a lot of possible reasons</li> <li>✓ The automatic levelling device is kept for AFS/R123</li> <li>✓ Cost-benefit</li> <li>▪ Impacts = <ul style="list-style-type: none"> <li>✓ This means, deletion of the current artificial criterion of 2000lm</li> <li>✓ To keep manual or automatic levelling device at the discretion of the manufacturer because of a new more stringent diagram</li> <li>✓ In any loading cases (current or future Annex 5), the aiming shall remain in the new diagram.</li> </ul> </li> <li>- This approach for deletion of the 2000lm criteria to choose the type of levelling device is supported on the principle by the Netherlands, France, Italy because an improvement for both glare and visibility</li> <li>- Justification is necessary accordingly → see 1<sup>st</sup> draft in document <b>VGL-07-07</b></li> </ul> <p><b>Conclusion: Having a good box is the most important because the result is the most important → Justification started during the meeting (VGL-07-07) has to be improved</b></p> <p><b>The current proposal of the group without criterion but with improvement of the diagram in all cases of Annex 5 (still to be worked) is a solution to the 1<sup>st</sup> task in the ToR of the group</b></p>
--	--

<b>9.</b>	<b>Homework and preparations to next meeting</b>	
	<ul style="list-style-type: none"> <li>- Diagram: <ul style="list-style-type: none"> <li>▪ 0,95mm point (VGL-07-04 Line 7 and VGL-07-06) → mirrors at different heights could be glared – to be checked where does this value in the TC4-45 come from</li> <li>▪ Improvement of the justification especially for <ul style="list-style-type: none"> <li>✓ the tolerances necessary for Industry</li> <li>✓ vertical line 1 in 0:0</li> </ul> </li> <li>▪ Feedback from Industry especially for lines 7 and 8/9</li> </ul> </li> <li>- Deletion of any criteria for the decision of a type of levelling device → Justification to be improved</li> <li>- Loading conditions: <b>Valter Genone</b> will make a counter-proposal to the current Annex 5 and especially to mix cases 5 &amp; 6</li> <li>- To keep for Phase 2: Reference axis or lower/upper edges of apparent surface to be used according to the current technologies/designs?</li> </ul>	
<b>10.</b>	<b>Any Other Business</b>	
	Nothing added	
<b>11.</b>	<b>Next steps</b>	
	<ul style="list-style-type: none"> <li>- For the time being lines 1, 2, 3, 4 are kept and according to the feedback especially from Industry, but at next meeting we will make the final decision for the diagram - especially to make the choice between the lines 2 &amp; 7, and, between the lines 3/4 &amp; 5 or 8/9</li> <li>- Improvement of justifications for the diagram and for the deletion of a decision criterion</li> </ul>	
<b>12.</b>	<b>Next meeting(s)</b>	
	Next meetings (in combination with the TF HS):	

- 04-05 July 2017 – OICA/ Paris
- 12-13 September – Paris area (dates and location to be confirmed at July session)

**13. Closure**

Mr.Targosinski concluded the meeting:

- The main expectation was to find a better proposal than today
- He is in favor to have a proper illumination without glaring by tools feasible
- It is better to concentrate on the performance - we must have technological neutral requirements based on performances to be reached
- For the time being, in the frame of the 1<sup>st</sup> phase of the IWG VGL ToR, the result of the group is the new diagram (to be finalized) without criterion of decision of the type of levelling device (deletion of the current 2000lm criterion) according to the loading conditions in Annex 5 (to be improved at next meeting)

Mr.Targosinski thanked all participants for their fruitful contribution and closed the meeting.

VGL-07-xx = documents issued from this session

VGL-07-xx = documents not available before the meeting

---

Working documents listed in the agenda are available via the INTERNET:

<https://www2.unece.org/wiki/pages/viewpage.action?pageId=26903055>

## ANNEX 1

### Item 5 - Feedback from the last GRE according to the presentation done by the chair of this group

**Tomasz Targosinski** expresses that we should find the final version of the 'box'.

**Françoise Silvani** shows the graph from the GRE-77-27 status report and explains that the loading conditions should be finalized too for the final version of the graph.

**Antoine Pamart** quickly asks what the objectives of **Tomasz Targosinski** are about this graph as he thinks there are also the other items to be discussed. Could we establish a running order with time schedule?

**Derwin Rovers** supports.

#### Time schedule:

Justifications to be built accordingly □ 10:00-12:00 and 13:30-14:30

Conditions and process for loading □ 14:30-17:30

Criteria of decision for the type of levelling device □ 9:00-16:00

### Item 6 - Justification to the proposed diagram

Review of the first draft of Justification document proposed by OICA (*not distributed before the meeting*):

**Pauline Lejeune** presents the document for the attendees.

**Derwin Rovers** insists that the limits that will be defined will be the absolute boundaries including the vehicle tolerances. Confirmed by **Pauline Lejeune**.

**Antoine Pamart** asks if it could be possible to add a picture of the previous GTB/OICA line 2 before it was cut. **Pauline Lejeune** agrees and explains that the new justification will start by the line 2, then 4, 1&3 then line 5 at the end.

For the final justification, we will think about changing the order of the line and numbers to avoid any confusion.

**Masanori Kohno** has a concern about the line 1 and it is needed to have more justification.

**Pauline Lejeune** confirmed that the 1 lumen concern has to be explained more with the help of **Gerd Langhammer** (Chairman of TC4-45 group).

#### Line 2:

To take the explanation on TC4-45 for the definition/position of this line.

**Tomasz Targosinski** thinks that the 1 lumen is very artificial argument. He thinks that the method used by TC4-45 group was not properly justified on scientific point of view (using a window).

**Pauline Lejeune** has a concern that in case of removing the issue from TC4-45, how we can justify only the line 2 by the Klettwitz tests.

**Tomasz Targosinski** explains that if it is not enough simple and clear enough to convince all Contracting Parties. We can explain that the correlation exists with the TC4-45 with similar results.

**Derwin Rovers** is thinking that we should reference to the CIE Standard S021/E:2011 (issued from TC4-45).

So **Tomasz Targosinski** proposes to use a similar scientific method for defining the line 2 to replace the GTB/OICA line. To be developed by tomorrow for comparison.

**Derwin Rovers** understands well that if it is very similar, it will help for justification. We will have 3 ways converging to justify the line 2.

#### Line 4:

Scientific calculation to obtain it. See the justification modified by the Secretary.

**Derwin Rovers** expresses that ideally we should have only the line 4 but due to practical reasons, we agree to have a derogation for the line 3.

*Some discussion starts about the reference used: optical axis or lower edge of the apparent surface.*

After explanations from **Tomasz Targosinski**, **Derwin Rovers** thinks that it should be developed/modified in stage II of Simplification process. He understood also that the derogation is not influencing so much vehicles as vehicles are more at 0.7mm (it could be added in Justification).

**Tomasz Targosinski** talks about the possibility to change the philosophy for the reference: using optical axis (that should allow more flexibility for carmakers). According to carmakers, it is difficult to define in early stage of development.

To understand clearly: the line 4 is made scientifically based on optical axis. So, as the graph is made for lower edge of apparent surface, at least, all headlamps should be over the 50m visibility limit.

**Derwin Rovers** is not against to keep it as it is more in a 'safety point of view'.

→ **To keep this for Stage II of VGL and Simplification.**

→ To add in the justification that it is safer by using this lower edge even if the calculation is done on optical axis.

### Line 3:

**Tomasz Targosinski** asks if there are strong justifications for the 1.6% tolerances.

OICA members express that it is really needed to have those 1.6% tolerances and we can show different presentations from different carmakers.

**Paul-Henri Matha** - Presentation as Renault for tolerances: Results of theoretical calculations: quadratic calculation +/- 0.6%. This is for new vehicles at the end of plant and not for vehicles in use. With tolerances of 1.6%, we can take into account the power train behavior - the 1 sensor or 2 sensors solutions for automatic levelling device: In case of 1 sensor, it is impossible to manage the power train behavior → so it is needed to have 2 and this is more expensive solution.

*Discussion starts on the technologies: levelling tolerances, number of sensors...*

**Tomasz Targosinski** also comes back on the CoP issues that when the vehicle is type approved. This tolerances of 1.6% don't take into account the CoP.

**Paul-Henri Matha** shows a graph from PTI results based on 5 years on Renault vehicles, and the average of defaults is around 1.5% of vehicle population checked.

+ Presentation done in the past in USA from Audi (public information) : similar results with +/-0.35° (around 1.6%).

**Derwin Rovers** thinks that the tire pressure tolerance has not to be included in the tolerances.

**Antoine Pamart** and **Derwin Rovers** can trust the data and they need time to digest them to know if the 1.6% of tolerances could be acceptable or at least for lower mounting height headlamps, to be lower value(s).

+ Presentation of the BMW document:

Listing without values the parameters to be taken into account as influencing the total tolerances.

After explanations, **Tomasz Targosinski** can understand why the differences between different tires should be included in the total tolerances.

### Second day

On the second day, **Tomasz Targosinski** shows the result of his calculation for the line 2. New proposal for the red line [0:0.95] to [1:1.2]

The arbitrary distance of 25m is the limit where glares is considered as quite reasonable and could be acceptable.

Question from **Antoine Pamart** if there was a link with TC4-45 method?

**Tomasz Targosinski** replies that it was using 25m during the test (in Leuven in 2007 – I was there too).

**Pauline Lejeune** expresses that this is going even further than GTB/OICA proposal for passenger cars. The concern is more on the light duty vehicles where the tolerances are reduces (1.4% at 1.2m). It is needed to confirm this point with Jean-Louis Chazalotte from Volvo trucks.

**Jean-Marc Prigent** expresses that it is also needed to double check with other OICA members making small trucks.

**Antoine Pamart** remarks that finally these two line (2 and 7) are very close - this line 7 is a good justification to allow to keep the line 2 instead of changing to this new line.

**Derwin Rovers** supports.

**Tomasz Targosinski** is still considering that the line 2 is artificial.

**Antoine Pamart** thinks this is not artificial with slide 167 (Slide 38 in VGL-05-04)

Some members of the group reply that it was coming from GTB/OICA measurement curve

**Tomasz Targosinski** reacts saying that the GTB/OICA curve was defined with a very small amount of headlamps (not enough representative).

*Discussion about using the optical axis in general, as done for the calculation done on new Line 7.*

It could be more realistic to use the height 1.1m instead of 1.2.m. Then redefine the Line 7 accordingly.

**Derwin Rovers** explains that the graph of Tomasz Targosinski is made for optical centre and reminds that currently in the regulation we talk about the lower and higher edges, this means that at 1.2m we will be always below according to this graph – so he is still confident to use this last one as the Line 7 allows to go further on the left.

**Pauline Lejeune** explains her point on view with impact on the diagram and finally we cross the same point at 0.85

**Tomasz Targosinski** makes a reference to the Regulation 48, Annex 6 §.2.2. with its figure 1 because 2 different places in the R48 describe the same thing

**Pauline Lejeune** reminds the §.6.2.6.1.2. with reference to the lower edge of the apparent surface and also the §.5.8 for the definition

**Valter Genone**: in practice we decide – we have to take into account the cut-off line

**Derwin Rovers:** from a photometric point of view, in complex LED headlamp it would be not so easy in comparison with old headlamps where it should be relatively easy

**Pauline Lejeune** reminds that as said on yesterday this is defined when the lamp is approved and at least we need to have it to take the decision for having a levelling device. During development it is difficult to define the optical axis from the beginning.

*Jean-Louis joined us and Pauline summarized what has been discussed before his arrival*

**Frederic Hay:** at 0.95 you can have 0° so we can have glare – we can go further

**Valter Genone:** we are talking about static conditions

**Derwin Rovers:** different views coming and he is not so sure that it is enough to convince GRE members. He expresses an uneasy feeling. This will not be an easy message to sell to express some concern.

**Tomasz Targosinski:** the only truth is interesting. We are talking about static conditions but in real conditions we have additional influences. It causes consequences. We cannot solve all problems. The reasons for glare are also in different places. For in-use aiming, according to researches, a lot of complaints are not coming only from this box but a lot of other reasons

**Derwin Rovers:** if we focus on improvement of the current box – if we would stick line at 0,2 as black dot line, we need no justification

**Pauline Lejeune:** how explain that we improve the current situation for glare?

**Tomasz Targosinski:** this is not the reason of current glare complaints. The initial aim is not maintained is the main reason. OEM can decide to have the initial aim lower because it is a complex combination

**Derwin Rovers:** the reality is that we have certain CPs with concerns on this part

**Pauline Lejeune:** we have to improve the glare situation and focus on the glare here and levelling. From the very beginning everytime we try to change the limits; everytime there is no consensus because not enough justification. No sense politically. Glare is coming from something else. OEMs constraints need to be integrated in the work of this group.

**Tomasz Targosinski:** adding some margin to reality can make sense

**Masanori Kohno** expresses that Japan wishes to move the line 1 to the right till 0.2 instead of 0. Then he explains the deviation of the cut-off due to dynamic effect.

**Valter Genone:** here we have what we can theoretically achieve. We are taking into account the reality and the theory there is something more. + the CoP limits. The conditions can be accepted

**Pauline Lejeune:** explains we already make an improvement according to the theory with both red and brown lines at 0. This is a simple explanation to stress where you can go above the horizontal line and create no glare. Her target is not to do that but to explain that with the vertical line at 0 we already made some improvement.

**Tomasz Targosinski:** of course glare decreases with the distance because of the intensity

**Derwin Rovers:** we can use this work. Theoretically we go further and then we can say that the conclusion of the group is to have this vertical line for safety margin

**Antoine Pamart** expresses that the work of Tomasz Targosinski confirms that the line 2 is enough strong for GRE. The work on the line 7 can be added to the justification

The Line 7 comforts the Line 2 and it could be added in Justification.

**Tomasz Targosinski:** the same experience with 20m can give a totally different result – glare is not so dangerous – this distance is short enough to explain the glare is not dangerous

**Antoine Pamart:** OK but the report has to reflect the different comments

**Tomasz Targosinski** we have the Lines 1, 2, 3, 4 and 5 and the lines 6 & 7 to help the justification

**Antoine Pamart** remarks the justifications for lines 1 & 2 are similar

**Françoise Silvani:** If we move to the right the line 1 then we have to move also the Line 3 from 1.6 to 1.8

**Pauline Lejeune:** we have no justification to move the line 1 to 0.2 except for political reasons

**Jean-Marc Prigent** stresses if the line 2 is moved then the line 3 has also to be moved

**Derwin Rovers:** the justification of the line 3 is independent of where it is, the justification will remain the same. With the slip of 0.2, then the improvement of visibility will be less.

**Tomasz Targosinski:** any criteria which separate manual or automatic levelling is artificial. We need to guarantee the visibility and avoid the glare. To have such criteria to have automatic or manual levelling is not properly. He proposes to have a new look on what kind of device we have to use. At the discretion of the manufacturer?

**Derwin Rovers:** what are the tasks of ToR? According to our official objectives we only have to find a solution. Our current proposal is OK according to the phase 1 of the ToR

**Pauline Lejeune:** at least it would be technology neutral

**Derwin Rovers:** it is improved, technology neutral.

**Tomasz Targosinski** requests the opinion of the group. The type of levelling will be the decision of the OEMs

**Derwin Rovers:** Germany, NL and Austria made a proposal to comply with the gentleman agreement but now we have a new proposal only from Japan & Germany

**Tomasz Targosinski:** the type levelling decision based on performance will be the decision of OEMs

**Valter Genone:** we can justify to keep manual and automatic levelling and, because the glare situation is so rare, so the cost-benefit is not justified. It is the only way to keep the decision at the discretion of the manufacturer. We need to show that it is so rare that it is not justified to always have an automatic device mandatory

**Frédéric Hay:** we have to be consistent. The line 3, it is not technological neutral

**Pauline Lejeune:** it is independent of the type of levelling

**Valter Genone:** the tolerances are for all types of engines. The tolerances are the same. No differences between automatic or manual levelling. The tolerances are applicable for any technologies

**Pauline Lejeune:** it is not a good or bad manufacturing systems. We need at least this margins of tolerances. The tolerances are not only for the levelling device but also for engine, the chassis, the springs, ...

**Tomasz Targosinski** is not convinced about the values given by the OEMs

**Valter Genone:** There are physical limits you cannot exceed

**Pauline Lejeune:** the data have been provided. We look at them because of so many other reasons. We need to try to reduce the tolerances as much as we can

**Tomasz Targosinski:** some issue shown in the presentation of BMW are not concerned our topic

**Jean-Marc Prigent:** according to the tests done in laboratory in Poland, you took one car with one type of suspension. We never have the same car with the same components. We have to include the diversity of the model.

**Tomasz Targosinski:** for vehicles in-use

**Jean-Marc Prigent:** it exists but we cannot regulate it

**Pauline Lejeune:** you mixed different things. We produce cars approved.

**Tomasz Targosinski:** this is not consistent with what he found

**Françoise Silvani:** in this case you have to introduce requirements for in-use vehicles

**Jean-Marc Prigent:** this is not the same discussion

**Tomasz Targosinski** re-explains his results

**Pauline Lejeune:** we have differences between left and right headlamps because the inclination during the load process. The reaction will not be exactly the same. She explains the  $I_{max}$ - $I_{min}$

**Valter Genone:** the vehicle is not moving in parallel. We do not have only the case 6 of the Annex 5. We have to take into account all cases. It is never exactly parallel. The inclination will not be exactly the same

**Jean-Louis Chazalotte:** reminds that we also do not forget trucks with very long chassis. Right and left behavior cannot be the same

**Tomasz Targosinski:** what are the tolerances? he cannot understand so big tolerances

**Pauline Lejeune:** we cannot do more than explain again and again

**Tomasz Targosinski:** all what we can stabilize

**Pauline Lejeune:** reminds data from BMW & Audi

**Derwin Rovers:** 1.6% includes some tolerances for vehicles not yet stabilized

**Pauline Lejeune:** confirms

**Valter Genone:** the stabilization is for the test and not for the real life

**Tomasz Targosinski:** makes again reference to his results

**Pauline Lejeune:** you compares different cars

**Tomasz Targosinski** is still not convinced that the 1.6% tolerances is justified and it should lower as after e.g. 1000km, the vehicle is stabilized. He is in the way to propose a verification by some measurements done by Photometric WG (GTB) or other laboratory.

### After second day lunch Break

**Tomasz Targosinski** restarts the meeting and requests opinions according to the previous discussions on the 1.6%

**Derwin Rovers** for the line 4, the road illumination distance is independent. We have a consensus about this approach with 50m. For the line 3, do we have to make a derogation on the principle to accommodate real life? If we have a kind of justification, it is OK. There is a common understanding for the Line 4 and the relaxation for the Line 3 due to real tolerances needed by Industry. Maybe we have to find a compromise between Line 5 and Line 4. On principle he can support the lines 3 and 4 with the need of derogation for real life

**Antoine Pamart** thinks quite the same. Line 3 and 4 are a consensus from the previous meeting. He is also opened to any alternative like Line 5 (30m visibility). If Line 3 and 4 can be good enough justified, he can support them or other not yet defined.

**Tomasz Targosinski** understands the Line 3 as an exception. Because we need tolerances we have a space. But not enough justified for him. It can be smaller. From another side, we have the 1.6% as tolerance so maybe we can keep this line. The line 5 is a clear idea. Maybe according to the yesterday's discussions we can improve the minimum visibility distance and he proposes to find a compromise between the 2 Lines 4 and 5 → new Line 8 starting from [0:0] and crossing point [1.6:0.6], with around 37.5m.

**Jean-Marc Prigent:** in this case, the amendment of the regulation would be a new series of amendment?

**Pauline Lejeune:** yes it will be

**Antoine Pamart:** does not understand

**Tomasz Targosinski:** the new Line at 37,5m = Line 8 for having no exclusion

**Jean-Marc Prigent:** the percentage of vehicles in this area will be very low

**Pauline Lejeune:** we have to check the impact on our vehicles

***OICA members will have to verify the new Line 8 and the effect on the vehicles with low mounting height headlamps. It is not only concerning sport cars but also some other 'normal' production vehicles.***

**Antoine Pamart:** we should consider this proposal as an alternative and prefers the Line 8 than the Line 5 to show that there is improvement especially according to the current diagram. It is following the black boxes actually in the Regulation N°48.

**Derwin Rovers:** we should consider the Line 8 as an alternative for Lines 3 & 4 and not to consider Line 5 according to the current diagram without real improvement. It would be a very good alternative

**Tomasz Targosinski** keeps in mind we are working with the optical axis

**Derwin Rovers** supports the comment and he is also interesting in the feedback from carmakers for the next session.

**Masanori Kohno** requests the justification for the Line 8. He explains that the value of 37.5m is maybe not convenient. It should be better to have 40m as it will be in line with some Japanese regional laws.

**Derwin Rovers:** if we take 40m, we should calculate the Line → Introduction of line 9 at 40m of visibility (1.5-0,6)

**Pauline Lejeune:** we check the apparent surface. Be careful if we change the center of reference. When we have the center of reference, we have it late in the development of the vehicles to be able to decide the design

**Frederic Hay:** lower mounting heights means sport cars with few variation of the pitch

**Pauline Lejeune:** we also can have different mounting heights for the same headlamps? So this means different type according to R48 type definition. In the plant it would be easier to have only one value to check and especially if the line 1 will remove to the right

**Derwin Rovers:** Line 8 or 9 are consensus pending the review. Lines 1, 2, 3, 4 are kept for the time being according to the feedback, we will decide which line we will keep

**Tomasz Targosinski:** reminds PTI constraints

**Pauline Lejeune:** here it is different of PTI because here it is for all loading conditions

**Valter Genone:** if line 1 is remove to 0.2%, then line 3 too

**Antoine Pamart:** lines 8 or 9 are linked with line 1. If this line 1 changes then we will have to discuss again

**Valter Genone:** with both line 1 at 0.2 and line 9, it will be impossible to do

**Derwin Rovers** does not like line 5 if line 1 removed and prefers lines 3 and 4. He supports Valter comments with the slip to the left for the glare and to the right for the visibility. We have an improvement in all cases. With lines 3 & 4 we also have improvements.

**Frederic Hay** asks the decision for the reference axis → not decided if we take it or not?

**Françoise Silvani** reminds the previous decision which was that the reference axis should be kept for discussions of phase 2

**Derwin Rovers:** the task of today was to find the justification. Our job on justification has been done

***Common support from Contracting Parties. OICA members explain that it is needed to check carefully this new Line 9 as the biggest population is between 0.6 to 0.9 heights.***

- ***Line 1 maximum on the 0. In case it is moved to -0.2 as Japan proposed, Line 3 will be consequently moved from -1.6 to -1.8.***
- ***OICA to prepare new justification document including the Line 7 as justification***
- ***To prepare a new graph keeping the blue box and adding the Line 7 for Justification for the next session in July. Still need justification on left side.***
- ***To take care about Japanese comment to use margin and start the blue box from -0.2.***

#### **Item 7 - Conditions and process for loading**

**Pauline Lejeune** reminds the GTB/OICA proposal from the document VGL-05-03

**Tomasz Targosinski** reminds also his proposal

**Pauline Lejeune** asks how to demonstrate the worst case?

**Antoine Pamart:** the current Annex 5 is enough. We do not need to include such kind of measurements considered too long and too much

**Valter Genone:** 1<sup>st</sup> row could influence something. The 3<sup>rd</sup> row with people and then rear. This is enough. The behaviour of the vehicle is already in the same sense. In 95% no change of variation in the inclination. It is impossible to test each one but only some vehicles. We already need 3 or 4 days for that. Not possible to all consider

**Pauline Lejeune** reminds the presentation VGL-05-07 with picture of vehicle full loaded. Extreme case will be still covered with the case 6 of the current Annex 5. We have to keep a simple check

**Valter Genone** takes example of crash tests with different possibilities to drive at such low and high speeds. Why do we have to take into account some cases impossible to use?

**Pauline Lejeune:** as conclusion, the current cases in Annex 5 can be kept with maximum and minimum cases

**Derwin Rovers:** either current Annex 5 with Polish assessment

**Pauline Lejeune:** we do not forget to link these loading conditions with the criteria of decision for the levelling device. We can agree to keep Annex 5

**Paul-Henri Matha** presents the 2 cases calculations done from the Polish proposal with Clio and Scenic (VGL-05-07)

**Tomasz Targosinski** presents his results 5 = Nissan Xtrail and 4 = Fiat + Jeep JLR

**Pauline Lejeune:** there are only Diesel engines. If you design cars usually we have diesel and petrol engines with the same lighting design. We do not create diversity according to the engine. When we check we equip all vehicles. We have to cover with the same device all the diversity of vehicles in a same model. We have showed neutral information on usage of vehicles

**Tomasz Targosinski:** reminds the reference to the type definition because of inclination device

**Pauline Lejeune:** type of engine has nothing to do with inclination and reminds that the OICA/GTB is a compromise. Most of the time and almost all usages there is/are only 1 passenger or 2 passengers

**Pauline Lejeune** comes back also on statistic on the number of passenger in a car during day/night in some European Countries. As well as the average of loading. It is up to M1 and N1 categories of Vehicles.

**Valter Genone** reminds that the N1 vehicles do not have 5 conditions but only 2.

**Françoise Silvani** reminds that only N1 used as passenger vehicles are considered under the OICA proposal.

**Tomasz Targosinski** reminds people do not use the manual levelling device

**Valter Genone** retorts that 1% - 99% cases people drive in good conditions

**Pauline Lejeune** points out that the 2 steps approach will decrease the visibility conditions

**Derwin Rovers:** notes that with the OICA/GTB proposal we have one more case for decision and with the ~~polish-Polish~~ proposal two continuous loads of vehicle. He understands that the logical graph (slide 20) is different from the first GTB/OICA proposal of applying the 50% conditions. Now it is needed to comply with all loading conditions from the Annex. He is thinking that we have two proposals for making the decision to select the levelling device. He is not in favor of one or the other except of the 50% criteria.

**Françoise Silvani** reminds that the concept from Poland is very difficult to predict during the development of new platform. When it is an old platform, it is easier but even in that case, it could be difficult.

**Derwin Rovers** is also convinced that for the GTB/OICA proposal, there are some predictions to be done in development stage.

**Pauline Lejeune** replies that in case of PSA, it is already taken into account to predict in advance (with some possible mistake). However, some carmakers are not so in advance on simulation, calculation... So it could be impossible for them to develop new platforms. She expresses also that with narrow tolerances, it becomes more and more difficult and costly to develop new vehicles.

**Tomasz Targosinski** summarizes that each solution has a weak point. And it could be envisaged to go for automatic levelling...

He is against putting in Regulation any artificial parameters like the 2 positions manual levelling device or the 50% loading condition.

**2 solutions available: automatic levelling or explaining to GRE that the problem is too complex and the group will not be able to find a solution easily and leave the Regulation like it is today.**

**Tomasz Targosinski** proposes to optimize the box limits and to delete the criteria of decision and the 2000lm artificial criteria too. Or mandatory of automatic levelling.

**Second day:**

**Valter Genone** cannot accept to continue with the Annex 5 loading condition of today's. He thinks the worst one is not realistic on statistic point of view. Very rare cases on the road. Case 6 is not useful. Also it is more severe than the trucks conditions.

He wishes to keep the loading conditions 2.1.1.1. / 2.1.1.2. / 2.1.1.5. only. Deletion of conditions 2.1.1.3. and 2.1.1.4.. He would like to keep only 2 loading conditions. Case 6 is useful only for trucks but no sense for passengers' cars

**Derwin Rovers** asks to consider a worst case for 2.1.1.2.: all the front seats occupied.

**Tomasz Targosinski** is concerned to not consider for levelling the 2.1.1.6.

**Valter Genone** is convinced that this is impossible to load 300kg on the back of rear axle (except gold...). This is done only in type approval conditions.

**Derwin Rovers** can accept this philosophy. It will simplify the test procedure and cover most of the cases of loading.

**Antoine Pamart** can maybe accept to delete second and third conditions. Then between the fifth and the sixth, we should redefine something more realistic: to be thought.

**Pauline Lejeune:** compromise could be 1, 2, and 5 to decide if levelling is useful or not – case 6 for performance

**Valter Genone:** M1/N1 – distribution of the load makes no sense for passengers' cars

**Pauline Lejeune:** with M1 it is very rare

**Derwin Rovers:** maximum axle load can be achieved with different distributions of the load

Case 5 could be adjusted – with 3 tests and not mandatory the most extreme tests can be considered

**Valter Genone:** no dangerous because it never happen

**Antoine Pamart:** he is waiting the proposal but not convinced about the interest to delete this extreme case 6. We want to check the max mass on the rear axle

**Jean-Marc Prigent:** this means to change a little the current case 6? Or case 5?

**Antoine Pamart:** maybe we have to mix the cases 5 & 6

**Derwin Rovers:** not the very extreme conditions but something

**Antoine Pamart:** can be done in different several ways. We know to know what happens with the max rear axle mass then mixing cases 5 & 6 could be possible in this way

**Tomasz Targosinski:** with manual device, how to describe the use of the manual levelling device? Every loading conditions have to be covered

**Valter Genone:** in any cases it is included in the range with the extreme cases

**Pauline Lejeune:** no request from OICA to change the annex 5

**Derwin Rovers:** we have to adapt the requirements to the new technologies and with our experience. It is an ongoing process

**Kohn san:** no levelling device is necessary if in any loading conditions we remain in the diagram. Otherwise an automatic levelling is mandatory because the manual levelling is not properly used

**Tomasz Targosinski:** main expectation was to find better proposal. Poland in favor to have proper illumination without glaring by tools feasible. It is better to concentrate on the performance. The next step will be taken in GRE to decide if we need automatic or manual device. We must have technology neutral requirements and tries to avoid to talk about the technology but to talk about the performance. The group is in position not able to find a criteria to replace the 2000lm criteria

**Jean-Marc Prigent:** in addition the Annex 5 will prove that the performance is reached

→ **Valter Genone will prepare something on loading conditions for next session in July.**

#### Item 8 - Criteria of decision for the type of levelling device

Proposal from **Tomasz Targosinski** to delete any criteria to select levelling device type but instead to make the carmakers to respect the tolerances independently to the technology (deletion of artificial criterion of 2000lm).

**Frederic Hay** tries to oppose to technology neutral with those tolerances on the graph. Then discussion goes back to item 6.

**Pauline Lejeune** presents again the flowchart from the document VGL-05-07 + why the choice of the distribution of the load with the slides 27 & 28 – for M1 & N1 and explains the type of survey

**Valter Genone:** for M1 have 6 conditions and for N1 only 2 conditions – but the distribution is fully different so it is not comparable – for bigger vehicles 90% have automatic suspension

**Jean-Louis Chazalotte** reminds that automatic suspension will not solve all situations. So levelling device would be needed also with mechanical suspension

**Tomasz Targosinski** thinks it is an important remark. The distribution is an average

**Pauline Lejeune** reminds that we have professional drivers for heavy vehicles

**Tomasz Targosinski** reminds a: study which was sent to GRE experts with results sent to people who answered

**Pauline Lejeune:** someone said this morning that glare comes from PC and not from trucks

**Jean-Louis Chazalotte:** does the concern come from the initial aiming or the bad use of the levelling device?

**Tomasz Targosinski:** we also have concern of maintenance

**Pauline Lejeune:** the maintenance for automatic levelling device makes mandatory to go to the garage as shown by PTI with official data

**Tomasz Targosinski:** in Poland with PTI it is not significant

**Paul-Henri Matha:** shows also the values from FSD in Germany and the main issue comes with feedback of customers with camera. When we glare; not so many feedback for glaring from low beam

**Pauline Lejeune:** glare complaints never come from low beam but from main beam. We are only create something with high costs without solving the issue. There are complaints because too much flashes so it seems the drivers complaining is glaring. This is not relating to have or not a levelling device. Just increasing the cost on the vehicle

**Derwin Rovers:** OEMs have also to make a prediction with the OICA/GTB proposal as with the Polish proposal - if a good model for your new platforms exists, why 6 cases are not possible?

**Pauline Lejeune:** it is difficult to have a prediction which is accurate. It is not a linear behavior with the suspension and springs. It is difficult to predict with accuracy and a big challenge. We need to take some roots

**Tomasz Targosinski:** what is needed to have minimum illumination? How to guarantee to be in the box? Progressive manual device exists. OEMs have better knowledge to solve the glare issue. We are not responsible for all things regarding glare. New problem coming from automatic levelling. We have to look more globally and not mandate manual or automatic levelling device.

**Derwin Rovers:** focus the work on the tolerance box. The kind of levelling is the job of OEMs. The initial intention of R48 was to have automatic device and, manual was a derogation especially for those new technologies. Current technology will disappear

**Tomasz Targosinski:** our aim is the replacement of the 2000lm criteria with another criteria. Idea with the good base to have no glare. How to solve this problem is not the issue. Maybe it is time to say it is too complicated. Why required anything? Another look for reasons of accidents with a lot of questions according to the light as lamps are broken ... accidents is very rare situations

Conclusion: maybe we should have a good box and how to decide manual or automatic devices is not so important. The result is the most important

**Antoine Pamart:** the idea is to improve the box and to delete the criteria of decision for automatic or manual levelling device. The 2000lm criterion is deleted because we know it is not a good criteria

**Paul-Henri Matha:** for AFS we need this automatic levelling device with R123. So the criteria is 'automatic'

- ➔ ***The group starts to work on the justification for the deletion of the 2000lm criterion***
- ➔ ***To propose no criteria for decision and need of draft justification***