

GTR-ESC-2007-08

**1st IWG GTR-ESC MEETING
(Electronic Stability Control for Light Vehicles)**

Paris, June 5-6, 2007

DRAFT REPORT

Venue: OICA offices, 4 rue de Berri, 75008 Paris
Chairman: Mr. Ezana Wondimneh (USA/NHTSA)
Secretariat: Mr. Olivier Fontaine (OICA)

1.- INTRODUCTION

The chair opened the meeting by giving an overview of the GTR development work that lay ahead. He made the following points:

- Informal Document WP.29-141-22 presented to WP29. Consent given by WP29/AC.3 in March 2007 to start work on a GTR for ESC.
- WP.29/AC.3 decided to use the US final rule, published April 2007, as the basis for the GTR
- The EC decided to co-sponsor the effort
- This meeting was called by email, rather than waiting for the September GRRF, in order to minimize the time it would take to develop the GTR (This was agreed to by the chair of the GRRF)
- The major milestones would be:
 - September 2007: Consideration of formal draft text by GRRF
 - Fall/Winter 2007: IWG Meeting to be held to incorporate comments from GRRF, if needed
 - February 2007: Second consideration/adoption of formal draft text by GRRF
 - March 2008: Target for submission of a formal text and/or progress report to WP29/AC.3: (144th session of WP29).
 - June 2008: Target vote date for GTR at WP.29/AC.3

Discussions during the meeting led to the production of a revised text, document GTR-ESC-2007-03, distributed just after the meeting. The chair and the secretary then re-formatted that document as GTR-ESC-2007-04, and consolidated it using the attendees' subsequent comments into document GTR-ESC-2007-05. This later document is referenced as TRANS/WP29/GRRF/2007/14 for discussion at the 62nd session of GRRF (September 2007).

2.- DISCUSSION

Documents: GTR-ESC-2007-01 (USA)
GTR-ESC-2007-02 (USA)

The IWG considered GTR-ESC-2007-02 as the first draft text for the GTR, tabled by USA, and agreed to follow the proposed running order (document GTR-ESC-2007-01).

2.1 SCOPE AND PURPOSE

- To specifying performance and equipment requirements for electronic stability control (ESC) systems.
- To help reduce the number of deaths and injuries that result from crashes in which drivers lose directional control of the vehicles, including those resulting in vehicle rollover.

2.2 APPLICATION AND INCORPORATION BY REFERENCE (VEHICLE CATEGORIES)

- Scope of Regulation (Vehicles for which it applies):
 - US scope applies to all vehicles under 4,536 Kilograms (10,000 pounds).
 - No limit at 4,536 kg in ECE system.
 - All members in agreement to refer to SR-1 definitions.
 - Individual CP views on scope:
 - EC, NL, UK, F, CH, J: 1-1 and 2 < 3,5t
 - USA and CDN : 1-1 , 1-2 and 2 < 4,536 kg
 - D : 1-1 and 2 < 3,5t or no weight limit (1-1 and 2)
 - Two possible approaches were explored. A narrow scope that could be extended at the choice of a CP, and a wide scope that could be narrowed at the choice of a CP (if needed and justified).
 - The concern with the first approach is that harmonization would not be achieved between CPs since vehicles built to one CPs requirements would not necessarily be suitable for other CPs.
 - The second approach assures that a vehicle built to the GTR would be in compliance in all CP countries, even in those countries that need to narrow the scope locally.

➤ Conclusions:

- Wide scope approach adopted. That is category **1-1, 1-2 and 2 < 4,536 kg.**
- Preamble will discuss this point and leave open the possibility for a CP to narrow the scope as justified for its own territory.
- Above adopted unanimously.
- GVWR (Gross Vehicle Weight Rating) references to be changed to GVM (Gross Vehicle Mass) for consistency.

2.3 DEFINITIONS

2.3.1 Peak Braking Coefficient (PBC) evaluation method

Consideration of 3 methods: ASTM, K-method and future ISO method.

- ASTM and k-method immediately applicable.
- EU countries: keen to have another method to determine PBC (based on ISO work).
- USA: supported ASTM.
- NL: proposed to introduce k-method by copying gtr N°3 solution (motorcycle braking), i.e. reference to UNECE R13H.
- Conclusion: The two widely used methods available today would be used in the GTR at the option of the CP.

2.3.2 Test Track PBC: Discussion on value and wording in preamble

- IWG decided to replace Peak Friction Coefficient with Peak Braking Coefficient throughout the document
- OICA (PVGTR wording): “Unless specified otherwise in the relevant stages of the test sequence, the road must be dry and have a surface affording an adhesion coefficient (PFC) of 0.9. PFC values below this figure are acceptable provided that the vehicle fulfills the performance requirements.” OICA however drew the attention on other parameters that can be more important than surface PFC (e.g. tyres and variants of vehicles).
- CDN (Motorcycle braking gtr wording): “Specifying a nominal PBC of 0.9 allows for real world variations found on the test track. This allows some freedom in terms of the surface friction, which does not have to be exactly 0.9 to evaluate braking performance. When testing for conformity to the requirements, the manufacturer tests on a surface with a lower PBC, to test for the worst-case scenario. When verification of compliance is conducted by the administrations, it is conducted on a surface with a PBC slightly above 0.9.”

- UK: suggested to introduce the idea of “nominal value”. Could accept OICA solution as well.
- J: supported UK, with a tolerance on the nominal value.
- F: suggested to test ESC on 2 surfaces, high and low μ . Would however lead to repeatability problems in CPs that apply self certification.
- Possible Solutions Discussed:
 - 0.9 nominal – “PFC values below this figure are acceptable provided that the vehicle fulfills the performance requirements”.
 - EC + HUN + CDN + CH + USA: supported “0.9 + explanatory footnote”.
 - J + NL + D + UK: supported “nominal 0.9 + explanatory footnote”. Could accept “0.9 + explanatory footnote”.
 - F: supported “nominal 0.9 + explanatory footnote” + suggestion to test ESC on 2 surfaces. Could accept “0.9 + explanatory footnote”.
- Conclusion: Unanimous decision in favor of “0.9 + explanatory footnote”.

2.3.3 Paragraph 3.2. - “Electronic Stability Control System” or “ESC System”

- OICA: Noted that “ESC” is a trade mark (reserved by certain auto makers). Further research may be needed to resolve this item

2.3.4 Paragraph 3.2. (a) - “Multiple Axles Vehicles”

Discussion on how to handle vehicles with multiple grouped axles and dual wheel axles.

- EC: accepted to exclude multi axle vehicles.
- J: favored a footnote for including those vehicles as single axle vehicles.
- HUN: accepted to include multi axle vehicles + wording of UNECE R13 (footnote: “In the case of multiple axles, where the axle spread between one axle and its adjacent axle is greater than 2.0 m, each individual axle shall be considered as an independent axle group”).
- F: supported a footnote for treating those vehicles in the same way as other vehicles.
- NL: supported both possibilities.

- UK: wants to include multiple axle vehicles (targeted limousines).
- D: stated that this item should be considered as a “performance item” rather than a “definition item”.
- CDN: supported a footnote for including the multiple axle vehicles as single axle + “2 axles within a certain distance are considered as one axle”.
- CH: supported the inclusion of multiple axle vehicles.
- Conclusion: UK, NL, HUN, F, D, J in favor of simple footnote explaining that these types of vehicles would be treated in the same way as other vehicles.

2.3.5 Paragraph 3.2. (f) - “ESC operability below 15 km/h”

- Prescription subject to petition from vehicle manufacturers in the USA. (reference Docket NHTSA-2007-27662-4)
- OICA supportive of this petition.

2.3.6 Paragraph 5.4.2. - “Common space”

- Need for a proper definition of “common space” to identify tell-tale location.
- Conclusion: added a new definition for “common space” (new paragraph 3.9.)

2.3.7 Paragraph 4.1. - “Initialization period”

- The group agreed on an improved wording (re-arrangement of the prescriptions).

2.4 PERFORMANCE REQUIREMENTS

- OICA General Comments: OICA in general agrees with the proposed test procedure. However, the following points were raised:
 - Simulation should be permitted as a tool for CPs that apply type approval certification (supported by NL).
 - Simulation would best be placed in “test procedure”.
 - Technical documentation submission requirements in the draft GTR may result in the compromise of companies’ intellectual property.
 - A single ESC tell-tale should be permitted for both the “ESC OFF” function as well as to indicate ESC system failures or faults.

- Other considerations:
 - Figures 1 & 2: “steering wheel” should be written in place of “handwheel”.
 - Figure 1: represents a fail case. The figure should represent a “pass case”.
 - Formula for lateral displacement should be improved if alternative is proposed and validated within the time frame granted by WP.29/AC.3 (paragraph 5.3.1.):
$$\text{Lateral Displacement} = \iint a_{y\text{C.G.}} dt$$
 - Steering controls with no steering wheel (e.g. “joy sticks”). The technology does exist, but there is currently no intention to market such vehicles. D keen to consider this. USA does not regulate steering system. Conclusion: CDN committed to provide a text for the preamble.
 - Malfunction tell-tale location. A discussion took place on the best wording:
 - “In front of”: CDN, CH, NL, J
 - "in direct field of vision of": HUN, EC, UK, USA
 - Delete: D, F.
 - SEMA: “facing”.
 - USA: “facing when driving”.
 - Conclusion: The group finally agreed on the following wording: “Must be displayed in direct and clear view of the driver while driving”.
- ESC symbol: Details to be supplemented by USA.
- ESC-off philosophy:
 - OICA keen to have possibility of one unique telltale for failure and de-activation indication.
 - J: The ESC malfunction indicator should be used for other stability systems e.g. traction control (paragraph 5.4.(c)). US indicated that the proposed wording does not prevent the activation of the lamp for a system self-test.
- “Tell-tale extinguishing”: (paragraph 5.4.(e)): petition for reconsideration from Alliance in the USA (reference Docket 25801-53) is pending. The IWG decided to consider this issue at the next IWG meeting or at the GRRF plenary session.
- ESC Off and Other System Controls (paragraph 5.5.):
 - OICA keen to get combined tell-tale accepted (ESC malfunction and ESC –OFF). Concerns:
 - Mandating 2 tell-tales would change customary practice
 - Requiring an additional tell-tale is a major burden for the manufacturers.
 - D: interested in any accident data about vehicles with unique tell-tale.
 - Conclusion: issue to be revised at next IWG or GRRF.

- ESC disabling: CDN keen to require an ESC disable switch to facilitate government needs like emissions testing. Others at meeting indicated that ESC could be deactivated for government inspectors using a software based solution or by other means.
- ESC System Technical Documentation (paragraph 5.7.):
 - OICA keen to introduce precise requirements about necessary documentation in order to avoid adverse technical services interpretations.
 - CLEPA: has concerns about data confidentiality.
 - Conclusion: possible language to be prepared by any interested party for consideration at the next IWG meeting.

2.5 TEST CONDITIONS

- Wind speed: provision was re-worded in order to use SR-1 vehicle categories.
- Vehicle mass: HUN: keen to have precise requirements to keep vehicle balance (concerns about testing equipment influence). Homologation experts however of the opinion that this is of negligible effect compared to the different vehicle variants, types, etc.
- Outriggers (paragraph 6.3.4.):
 - Could influence the results.
 - Outriggers necessary in both regimes.
 - In Type Approval regime, simulation could solve the issue. Outriggers are however of limited influence. If necessary, the vehicle can be tested again w/o outriggers.
 - Conclusion: need for further thoughts (for type approval system).

2.6 TEST PROCEDURE

- Gearbox at start of testing (paragraph 7.9.1.): need for clarification; coasting means gearbox in neutral, need for limiting engine brake.
- Official proposals about test procedure to be tabled at GRRF-62.

2.7 PREAMBLE

Legal status: reference for the meeting to keep trace of the rationales for the proposal of the regulatory text.

- Wording: should be amended to cover all contracting parties considerations.
- HUN: committed to produce a proposal on how to handle preamble.

2.8 OTHER BUSINESS

Necessity to consider the impact of the gtr on the after-market.

- ETO: concerns that after-market tuning materials (e.g. tyre/wheel packages, pads, discs, suspension, etc.) could conflict with ESC. Need for consideration from the group.
- Chair and CDN: issue difficult to be dealt with by governments.
- OICA: matter of Periodical Technical Inspection (PTI).

3.- **CONCLUSION**

Main pending items:

- Preamble re-work to reflect agreed changes at the first IWG meeting and to correct errors, typos, etc. .
- Question on how to handle technical documentation submissions for type approval and self-certification systems, including Intellectual Property Rights (IPR).
- Question on how/whether to allow simulation for type approval certification systems
- Auto maker petitions for amending/changing proposed prescriptions.

4.- **DATE AND PLACE OF NEXT MEETING**

Geneva, Palais des Nations

September 24, 2007, starting at 10:00 am, finishing around 5:30 pm.

September 25, 2007, starting at 9:30 am, finishing around 12:30 am.

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