

REPORT on the Position of the PVGTR INFORMAL WORKING GROUP discussions at the end of 2005.

Current Position Statement

a) PVGTR Status.

The 8th meeting of the PVGTR Informal Working Group, which was due to take place in December 2005 was cancelled as a result of a decision made at WP29 when the Motor Cycle GTR was seen to have come up against similar difficulties to those being experienced in the PVGTR. Although there are other difficulties, the particular problem of reaching agreement on a unified approach to testing ABS has brought about this situation.

Progress on the PVGTR has been halted whilst other means of evaluating ABS performance are being explored and it is hoped that a solution found for Motor Cycles can be also applied to passenger vehicles.

b) Progress made in discussions.

Difficulties in obtaining the necessary compromises between European and North American positions on the contentious issues, led to the concept of 'options' being introduced into the GTR proposal documents.

Industry considered that an unlimited number of options within the GTR text would produce an unmanageable situation and therefore sought a 2-version GTR. This would mean that a full version would contain all the all the rules covering old and new technology systems would exist alongside a slightly reduced version in which some 'difficult to apply' requirements could be omitted on the grounds of being unacceptable given the Certification process.

The situation reached after discussions at the 7th PVGTR meeting, prompted a strategy which would generate text for a full specification version and then obtain feedback from USA on those clauses which need to be redefined or made part of the delete option.

This is not so serious as may at first be perceived, since basic braking performances have been agreed for some 10 years.

1. Issues which have been agreed in addition to basic performance standards.

- a) Scope: Passenger vehicles of Category 1-1 up to a 3500kg limit but extendable for National applications provided that the Regulation requirements were followed.
- b) Test procedures to be an integral part of the Regulation.
- c) Type of parking brake and hill holding performance.
- d) Parking brake dynamic test removed.
- e) Dual circuit service braking systems only allowed (essentially from a foot control).
- f) Steering correction allowed on each dynamic test as in FMVSS 135.
- g) V_{max} definition adopted from FMVSS 135.
- h) Hot performance test principle agreed.
- i) EMC requirement noted as an important consideration in the introduction in consideration of the expected world-wide Regulation coverage and variable EM environment.
- j) On non-ABS vehicles, braking distribution calculations to be allowed as an alternative to the defined test where the Certification Process can accept this.

- k) Electronic vehicle control system safety concept requirement made optional.
- l) Burnish procedure taken from FMVSS 135.
- m) Warning signals and sources listed as in FMVSS 135.
- n) Reservoir design, volume and labelling, largely as Reg.13-H.
- o) Stopping distance and MFDD measured but compliance with both needed only in marginal result cases.
- p) Normal dry road PFC set at 0.9 but less allowed provided it does not cause a test failure.
- q) Type O cold performance test practice to be made with ABS cycling on High μ surface or avoiding wheel lock if not equipped with ABS.

2. Issues which might be solved by further discussion and some compromise.

- a) EPB requirement: No half performance in the failed case but at least dual input command circuits giving full performance with an input fault.
- b) Full Power systems: Pressure fall warning rules.
- c) Service braking performance with an unbraked trailer (calculation only).
- d) Stop lamp illumination: Selective braking issue.

3. Issues in which agreement appears most difficult to reach.

- a) Static parking performance with a trailer having no braking.

In most countries, this is seen as an important test to be made on a 12% grade so that hill holding can be assured in all cases where the trailer load does not exceed the legal limit.

- b) ABS performance assessment on a low adhesion surface.

The North American view that ABS is a stability system and stopping distance is not important is open to criticism in mixed traffic conditions. European Contracting Parties demand assurance that in preserving stability, too high a cost is not made in stopping distances. The method of test which has evolved under Regulation 13, is complicated and requires expertise and vehicle adjustment in order to be successfully carried out. The result of operating under the Reg.13-H test regime for many years has been to evolve, through software provisions coupled with responsive hydraulics, a high standard of ABS operation which is now accepted as the Industry Standard, prompting all new suppliers to achieve equivalent results or face public criticism. Despite this expected standard, it has proved impossible to delete the test or to define an alternative low adhesion test which would be more easily made than the k-test method and at the same time be reliable, given the variability in adhesion level on low adhesion surfaces such as Jennite and Basalt tiles.

- c) Provisions to be made for lining wear assessment in PTI.

The requirements for such provisions are one of the most variable factors likely to be met in a world-wide application of any GTR. There is no absolute level of periodic inspection mandated or even infrastructure to support such a section in the Regulation and indeed

many countries have no requirement at all. In this situation it is questionable whether these provisions should be included or whether they would be better left to National definition.

d) Regenerative Braking System test procedures.

There are some important differences which have been separately developed on this topic by Europe and NHTSA and discussion has only just begun on the means needed to achieve harmonisation.

The requirements of Reg.13-H are more complex because it deals with fairly powerful levels of braking which can be achieved, under best conditions, with Category B regenerative braking which is used as part of the service braking system.

With fully charged batteries however, the level of regenerative braking can be very small and it is seen as important to apply friction braking compensation to maintain a reasonably constant pedal feel. No similar requirement appears in FMVSS 135, so detail discussion is needed on this fairly complex topic but this has not yet taken place.

The other issue with RGB testing is the means of achieving the required speed for the heating phase and the subsequent hot test. Reg.13-H permits a lower speed to be used if insufficient battery energy exists where FMVSS 135 requires the vehicle under test to be pushed by another vehicle.

These problems with regenerative braking need to be reviewed in the light of the vehicle types which may become common in the near future as those with Hybrid Braking systems may accept simpler rules than those with electric traction only.

The working documents need to be updated following PVGTR7 and these should then represent the best approximation to the final form of the GTR. The low adhesion ABS performance is put in to the document as Appendix 1 and is taken from Reg.13-H which involves k-testing. Requirements such as the Electronic System Safety Concept and the braking distribution calculation are made dependent on the Certification Process.

The current updated text has not been critically scrutinized by all members of the PVGTR Informal Working Group as efforts have been concentrated on attempting to find a compromise solution on the issues listed above. However the editing of the new text of this proposed Regulation will need to be taken into account when considering the time scale to completion.

These issues in section 3 now need to be addressed and either a solution reached or these are declared to be optional in the reduced version of the GTR.

If the practice adopted in the earlier harmonisation programme is repeated as will be the stated policy of NHTSA, there is unlikely to be a single text operated throughout the world. This is because, even though the test order and test specification layout is adopted from FMVSS 135, the GTR text will be subject to review and amendment by legal bodies in North America. An important decision will be the point at which this task is undertaken and an estimate will be needed on the time that this adjustment will take if a completion date is to be promised.