Japan's Comments on the 2007ESCgtr IWG V.3

Transmitted by the expert from Japan

---

(1) 5.3.1 Measurement Method of Lateral Displacement

A. PROPOSAL

5.3.1. ~~The computation of lateral displacement is performed using double integration with respect to time of the measurement of lateral acceleration at the vehicle center of gravity, as expressed by the formula:~~

The value of lateral displacement may be obtained either by direct measurement or by performing the double integration of the measurement value of lateral acceleration as described below;

a) Based on the locus of the vehicle center of gravity displayed by the GPS system

b) The computation of lateral displacement is performed using double integration with respect to time of the measurement of lateral acceleration at the vehicle center of gravity, as expressed by the formula:

$$\text{Lateral Displacement} = \iint ay_{C.G.} dt$$

B. JUSTIFICATION

- The draft defines the lateral displacement by a double integration formula of lateral acceleration (aycg). It seems to exclude the measurement methods other than the use of lateral acceleration.
- Considering that it is now possible to directly measure the lateral displacement by a highly accurate GPS system, however, use of advanced measurement methods as such should be accepted.

(2) 6.2.2 Measurement of the Coefficient of Friction of the Road Test Surface

A. PROPOSAL

~~(b) the method specified in the Annex XXX of this regulation~~

(b) test method specified by the ISO 8349.

B. JUSTIFICATION

- The draft accepts the value determined by the "K-test method" defined in the Appendix 2, Annex 6 of

R-13H as an alternative, but it is technically incorrect.

- The K-test method calculates the coefficient of friction of the road surface using the tyres fitted to the vehicle. The coefficient of friction of the road surface determined by this method would vary according to the combination of test vehicles and tyres. Therefore, it cannot be regarded as the coefficient of friction of the road surface itself. (In the ABS, the K value is not ultimately used as the road surface friction utilization rate, but it is used as a ratio, which is different from the purpose of using the K value in this draft.)
- Since the K value does not match the value measured according to the ASTM E1137-90, it is incorrect to consider it to be an "alternative."

(3) Addition of 6.2.4 on the correction of the test result when the vehicle is tested on the road surface of which coefficient of friction is greater than 0.9

A. PROPOSAL

6.2.4 When a road surface with a coefficient of friction greater than 0.9 has to be used as a test road surface with no alternatives, correction shall be made based on the difference of the coefficient of friction on the value of lateral displacement defined by 5.3.1.

B. JUSTIFICATION

- We are greatly concerned that test courses with a road surface coefficient of friction greater than 0.9 may not be approved as a test course for certification, if 6.2.2 of the draft is strictly applied.
- The lateral displacement defined by 5.3.1 is significantly affected by the road surface coefficient of friction, but since it is a double integral of the lateral acceleration, it is assumed that correction can be made based on the difference of the road surface coefficient of friction.
- We will make a proposal on the correction equation and correction adequacy after studying them in future.

(4) 6.3.4 Regulation on the Use of Outriggers

A. PROPOSAL

6.3.4.Outriggers Outriggers must be used for testing trucks, multipurpose passenger vehicles, and buses. Vehicles with a baseline weight under 1,588 kg must be equipped with "lightweight" outriggers and vehicles with a baseline weight equal to or greater than 1,588 kg to the weight less than 2,722 kg must be equipped with "standard" outriggers and vehicles with a baseline weight equal to or greater than 2,722 kg must be equipped with "heavy" outriggers. A vehicle's baseline weight is the weight of the vehicle delivered from the dealer, fully fueled, with a 73 kg driver. Lightweight outriggers shall be designed with maximum

weight of XX kg and a maximum roll moment of inertia of XX kg-m². Standard outriggers shall be designed with a maximum weight of 32 kg and a maximum roll moment of inertia of 35.9 kg-m². Heavy outriggers shall be designed with a maximum weight of 39 kg and a maximum roll moment of inertia of 40.7 kg-m².[SR1 categories]

[As the weight and the roll moment of inertia of standard outriggers in the draft are different from those in the report described in "Justification", we have decided not to enter the values concerning the lightweight outriggers. We would like NHTSA to enter the values.]

B. JUSTIFICATION

- The draft implies that vehicles may be equipped with only two types of outriggers, i.e., standard and heavy. If this is the case, the performance of lightweight vehicles may significantly be affected.
- In Rollover NCAP, NHTSA has specified another type of outriggers for lightweight vehicles to be fitted to vehicles of 3,500 lbs or less. Therefore, this gtr should also accept the use of such outriggers.
  (NHTSA Docket No. 9663-75 [Jan. 2003]:
  NHTSA's Experience With Outriggers Used For Testing Light Vehicles – A Brief Overview)

(5) Overall comment

There is no description on the "required level of accuracy" for the measurement values of the test results, although it is described in the preamble (p.57). Is it not a practice to include such a description in the body of gtr?