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agenda item 4.)

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 111

(Handling and stability of vehicles)

Transmitted by the Expert from the Russian Federation

Note: The text reproduced below was prepared by the expert from the Russian Federation in order to amend the text of the Regulation. It is based on the text of a document distributed without a symbol (informal document No. 24) at the fifty-first session (TRANS/WP.29/GRRF/51, para. 31).

Note: This document is distributed to the Experts on Brakes and Running Gear only.

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Insert new paragraphs 2.7. to 2.8.1., to read:

- "2.7. "Roll angle" means the difference between inclination angle of the sprung part of the vehicle to the horizontal surface and inclination angle of the tilt table platform. The inclination angle of the sprung part of the vehicle to the horizontal surface is determined for the cross section lying through the vehicle centre of gravity.
- 2.7.1. Roll angle is represented by the symbol "f".
- 2.8. "Rollover threshold" means the instant when all the wheels of one side of the vehicle have lost contact with the tilt table surface.
- 2.8.1. The inclination angle of the tilt table surface is represented by the symbol "e".

Paragraph 5.3.1.1., amend to read:

"... a tilt table angle of $e_c = 23^\circ$ has been reached for all tests in both tilt directions and roll angle f at those conditions shall not exceed 8° ($f_c = 8^\circ$)."

Paragraph 5.3.1.2., amend to read:

"... acceleration of 4 m/s^2 has been reached. Roll angle, f , at those conditions shall not exceed f_c ."

Annex 3,

Paragraph 1., should be deleted.

Paragraphs 2. to 4. (former), renumber as paragraphs 1. to 3.

Paragraphs 5. (former), renumber as paragraph 4. and amend to read:

"
..... cannot be fulfilled with this test load then:

- (a) a filling factor of the tank between 100 per cent and 70 per cent is acceptable. Loading of the tanks divided in sections shall be made separately, with filling factor of each section between 100 per cent and 70 per cent proportionally to the mass of whole fluid.

If, during testing, the tilt table inclination angle, which corresponds to the rollover threshold, is less than value of e_c or roll angle is more than value of f_c specified in the paragraph 5.3.1.1., the test shall be repeated with the fully loaded tank.

The values of tilt table inclination angle e_w and roll angle f_w shall be corrected by using the following formulas:

$$tg\mathbf{b}_p = tg\mathbf{e}_w \cdot \frac{A_T}{A_w} \cdot \frac{H_w}{H_g} + \frac{T_T}{2H_g} \left[1 - \frac{AT}{A_w} \right]$$

$$f_p = f_w \cdot \frac{A_T}{A_w} \cdot \frac{H_g}{H_w}$$

The values of e_p and f_p shall be compared with the specified values of e_c and f_c respectively.

where,

A_T - vehicle weight in case of loading by normal fluid;

A_w - vehicle weight in case of loading by water;

H_w, H_g - height of the vehicle center-of-gravity in case of loading by water and normal fluid, respectively;

T_T - theoretical wheel track at the vehicle cross section at the center-of-gravity point (see annex 4, paragraph 7.3.)

Annex 4,

Paragraph 3., amend to read:

"3. SYMBOLS (see also Figure 1)

I (-) = axle/bogie index
($i = 1 - n$, front to - axle/bogie;
 $i = T$, all axles/bogies;
 $i = M$, stiffest axle/bogie;
for semi-trailers only $i = K$, kingpin); and
 $i = 1$ for axles/bogies of semi-trailers

m_i (m) = nominal suspension roll axis height

.....
....."

Paragraph 7.2., amend to read:

"7.3. In case of semi-trailers separated from tractors, tipping effects are calculated by using the following formulae:

track with:

roll stiffness: $C_{DRESK} = C_{DRESL} / \left[\frac{AT}{AK} - 1 \right]$ "

Insert a new paragraph 7.5.5., to read:

"7.5.5. The vehicle roll angle when tilted on the tilt table in both direction with inclination angle $e_c = 23^\circ$, calculated by using the following formula:

$$f_{cc} = A_T \cdot H_g \cdot \sin(e_c + f_c) \cdot \cos e_c / C_{DREST}$$

shall be less than f_c ($f_{cc} = f_c$)."
