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Economic Commission for Europe**Inland Transport Committee****World Forum for Harmonization of Vehicle Regulations****Working Party on General Safety Provisions****113th session**

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Item 6(a) of the provisional agenda

Amendments to gas-fuelled vehicle regulations:**Regulation No. 67 (LPG vehicles)****Proposal for the amendments to Regulation No. 67 (LPG vehicles)****Submitted by the expert from Turkey***

The text reproduced below was prepared by the expert from Turkey. It proposes amendments to UN Regulation No. 67 on Liquefied Petroleum Gas (LPG) vehicles to insert new provisions on the location on the vehicle of the filling unit and a limitation of the service life of LPG containers. The modifications to the current text of UN Regulation No. 67 are marked in bold for new characters.

* In accordance with the programme of work of the Inland Transport Committee for 2016–2017 (ECE/TRANS/254, para. 159 and ECE/TRANS/2016/28/Add.1, cluster 3.1), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.17-12821(E)



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I. Proposal

Insert a new paragraph 2.21., to read:

"2.21. "Service life" means the life in years during which the containers may safely be used."

Paragraph 4.3., insert new items (i) and (j) to read:

"4.3. Every container ...

...

(i) End of service life of the container (Month/Year)

(j) Date of production (Month/Year)"

Insert a new paragraph 6.15.10.8., to read:

"6.15.10.8. The filling unit shall not be located at the bottom surface of the vehicle. The centre of outlet of filling unit shall be above 350 mm from the ground surface when the vehicle is in its reference mass. In the case the outlet of filling unit is located between 350 mm to 1,200 mm above the ground, in vertical plane the angle between horizontal road surface and outlet plane of the filling unit shall be equal to or greater than 60 degrees, if the outlet is directed downwards."

Annex 10, insert new paragraph 1.8., to read:

"1.8. Service life

The service life for which containers are safe shall be specified by the container manufacturer considering that external surfaces of the container may be inadvertently exposed to:

- (a) water, either by intermittent immersion or road spray;**
- (b) salt, due to the operation of the vehicle near the ocean or where ice melting salt is used;**
- (c) impact of gravel; and**
- (d) automotive fluids, including gasoline, hydraulic fluids, glycol and oils.**

The maximum service life shall be 15 years."

II. Justification

1. At the 112th session of the Working Party on General Safety Provisions (GRSG), the expert from Turkey introduced GRSG-112-22 proposing to develop new provisions on the location on the vehicle of the filling unit and a limitation of the service life of containers. Informal document GRSG-112-22 provides some worldwide statistical information on a number of LPG vehicles, LPG consumption and refuelling sites which indicates the significance and importance of LPG vehicles in worldwide transportation industry.

2. Although the maximum service life of compressed natural gas (CNG) tanks in use is defined in UN Regulation No. 110, there are no provisions or restrictions regarding the

maximum service life of LPG containers in UN Regulation No. 67. Countries follow their national legislations with regard to LPG container service life.

3. According to academic studies¹ on LPG container service life, the service life of LPG containers may vary with the external conditions such as corrosion, humidity, temperature, vibration, re-filling frequency, impact, etc. as well as the design, manufacturing and assemble processes of the container by its manufacturer. The service life is evaluated according to LPG containers' conditions of use. The LPG container must be replaced with a new one after its service life ended in order to ensure safe usage.

4. Thus, the lack of a harmonized implementation in the different countries of the in-service life of LPG containers may create problems. For the sake of a safer usage of LPG vehicles and enhanced safety of occupants, Turkey proposes to introduce a definition on "Service life" into the text of the Regulation and to add, in Annex 10, a new paragraph 1.8. to limit the maximum service life of the containers to 15 years, taking into consideration of the service conditions, defined by the manufacturer of the container.

5. Furthermore, Turkey proposes to add items (i) and (j) into paragraph 4.3. to indicate the production date and service life of the LPG container on the marking plate on the LPG container, preventing possible misapplications of the service life.

6. In the current text of UN Regulation No. 67, there are no provisions on the location of the filling unit of the LPG container outside the vehicle. As shown in informal document GRSG-112-22 with photographs of samples, the filling unit located under the vehicle causes problems including:

- (a) Difficulties with filling the LPG container;
- (b) Risks involved on occupational health and safety of LPG container filling operators;
- (c) When filling the container, obliges operators to kneel down/lie down on the ground;
- (d) When the vehicle is in laden position, the filler pistol maybe unable to fit the space between ground and filling unit and prevents the filling of the container.

7. Turkey also proposes to add new paragraph 6.15.10.8. to avoid the above-mentioned problems and risks, and to provide a safer use of the LPG container in vehicles.

¹ Kartal, F., Kisioglu, Y. "Fatigue Performance Evaluations of Vehicle Toroidal Liquefied Petroleum Gas Fuel Tanks" Journal of Pressure Vessel Technology, August 2017, Vol. 139.