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**PROPOSAL FOR DRAFT SUPPLEMENT 5 TO THE 01 SERIES
OF AMENDMENTS TO REGULATION No. 67**

(Equipment for liquefied petroleum gas)

Transmitted by the Working Party on Pollution and Energy (GRPE)

Note: The text reproduced below was adopted by GRPE at its forty-eighth session and is transmitted for consideration to WP.29 and AC.1 (TRANS/WP.29/GRPE/48, para. 24). It is based on document TRANS/WP.29/GRPE/2004/7, as amended by paragraph 23 of the report.

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Annex 10,

Paragraph 2.6.1., amend to read:

"2.6.1. General

The bonfire test is designed to demonstrate that a container complete with the fire protection system, specified in the design, will prevent the burst of the container when tested under the specified fire conditions. The manufacturer shall describe the behaviour of the complete fire protection system including the designed drop to atmospheric pressure. The requirements of this test shall be deemed to be ...

..."

Paragraph 2.6.2., amend to read:

"2.6.2. Container set-up

- (a) The container shall be placed in the designed position by the manufacturer with the container bottom approximately 100 mm above the fire source.
- (b) Shielding shall be used to prevent direct flame impingement on the fusible plug (PRD) if present. The shielding shall not be in direct contact with the fusible plug (PRD).
- (c) Any failure during the test of a valve, fitting or tubing that is not part of the intended protection system for the design shall invalidate the result.
- (d) Containers with a length of less than 1.65 m: The centre of the container shall be positioned over the centre of the fire source.

Containers with a length equal to or larger than 1.65 m: If the container is fitted with a pressure relief device at one side, the fire source shall commence at the opposite side of the container. If the container is fitted with pressure relief devices at both sides, or at more than one location along the length of the container, the centre of the fire source shall be centred midway between the pressure relief devices that are separated by the greatest horizontal distance."

Paragraphs 2.6.4. and 2.6.5., amend to read:

"2.6.4. Temperature and pressure measurements

During the bonfire test the following items shall be measured:

- (a) The fire temperature just below the container, along the bottom of the container, at minimum two locations, not more than 0.75 m apart;
- (b) The wall temperature in the bottom of the container;
- (c) The wall temperature within 25 mm from the pressure relief device;
- (d) The wall temperature on the top of the container, in the centre of the fire source;
- (e) The pressure inside the container.

Metallic shielding shall be used to prevent direct flame impingement on the thermocouples. Alternatively, thermocouples may be inserted into blocks of metal, measuring less than 25 mm². During the test the thermocouple temperatures and the container pressure shall be recorded at intervals of 2 seconds or less.

2.6.5. General test requirements

- (a) Container shall be filled with 80 per cent in volume of LPG (commercial fuel) and tested in the horizontal position at working pressure;
- (b) Immediately following the ignition, the fire shall produce flame impingement on the surface of the container, along 1.65 m length of the fire source across the container;
- (c) Within 5 minutes of ignition at least one thermocouple shall indicate the temperature of fire just below the container of at least 590 °C. This temperature shall be maintained for the remaining duration of the test, namely until when no overpressure is present in the container;
- (d) The severity of the test conditions shall not be mitigated by ambient conditions (e.g. rain, moderate/high wind etc.)."

Paragraph 2.6.6., should be deleted.

Paragraph 2.6.7., renumber as paragraph 2.6.6. and amend to read:

"2.6.6. Test results:

- (a) A burst of the container shall invalidate the test result.
- (b) A pressure of more than 37 bar, i.e. 136 per cent of the set pressure of the PRV (27 bar), during the test shall invalidate the test result.
A pressure between 30 and 37 bar shall only invalidate the test result in case visible plastic deformation is observed.
- (c) In case the behaviour of the protection system does not comply with the specification of the manufacturer and it leads to a mitigating test condition the result shall be invalidated.
- (d) For a composite container a release of LPG via the surface is accepted in case of a controlled release. A release of gaseous LPG within 2 minutes after the start of the test or a release capacity of more than 30 litres per minute shall invalidate the test result.
- (e) The results shall be presented in a test summary and shall include the following data for each container as a minimum:
 - Description of the container configuration.
 - Photo of the container set-up and PRD.
 - Applied method including time interval between measurements.
 - The elapsed time from ignition of the fire to the start of venting of LPG and actual pressure.
 - Time to reach atmospheric pressure.
 - Pressure and temperature diagrams."

Annex 15,

Paragraph 10.1.2.2., amend to read:

"10.1.2.2. The resealing pressure of a pressure relief valve before being subjected to a flow capacity test shall be not less than 50 per cent of the initially observed start-to-discharge pressure."
