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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS

Sub-Committee of Experts on the Transport of Dangerous Goods
(Twentieth session, 3-12 December 2001, agenda item 3 (b))

TANKS

Portable tank requirements

Thermally activated closing mechanisms for internal valves on portable tanks

Transmitted by the expert from the United States of America

1. At the 19th session of the Sub-Committee the expert from the United States of America presented a paper concerning the use of thermally activated closures for portable tanks intended for the transport of certain substances. This paper provides a revised proposal on the basis of the comments received by various members of the Sub-Committee. Specifically, we have amended the list of applicable substances and have revised the description of the duration of the activation time. This proposal is intended to:

- require thermally activated remote closures for portable tanks used to transport Class 3 flammable liquids;
- revise the current internal valve emergency remote shut-off device requirements in order to adopt more specific performance criteria and to make them consistent in 6.7.2, 6.7.3 and 6.7.4; and
- amend the requirements consistent with the capabilities of the devices that are currently commercially available and being used on portable tanks.

2. The current requirement in 6.7.3.5.4 states "*For filling and discharge bottom openings of portable tanks intended for the transport of flammable and/or toxic non-refrigerated liquefied gases the internal stop-valve shall be a quick closing safety device which closes automatically in the event of unintended movement of the portable tank during filling or discharge or fire engulfment. Except for portable tanks having a capacity of not more than 1 000 litres, it shall be possible to operate this device by remote control.*" The text in 6.7.4.5.2 is similar. There are a number of problems with this text. Explanations of the problems and proposed solutions are provided below.

3. The use of the wording "quick closing"could be clarified. It is proposed that the wo closing" be replaced with wording such as "*the self-closing system shall close immediately upon actuation*."

4. The requirement that the shut-off device close automatically in the event of "unintended movement of the portable tank during filling or discharge ...." is not practical and does not reflect the capabilities of emergency remote shut-off devices that are currently being used or commercially available for portable tanks. This feature is not suitable for portable tanks. It is proposed that these words be deleted in paragraphs 6.7.3.5.4 and 6.7.4.5.2.

5. The remote actuation feature is vague. No minimum distance is specified for the remote actuation device. It is proposed that more specific wording be adopted as follows: *"The self-closing system shall include a remotely actuated means of closure located more than 3 meters from the filling or discharge opening where the length of the portable tank allows, or on the end of the portable tank farthest away from the filling or discharge opening. The remote feature is not required for small portable tanks less than 1,000 litres capacity."*

6. It is proposed that a requirement be included to require that if the actuating system is accidentally damaged or sheared off during transport, each filling or discharge bottom opening must remain securely closed and capable of retaining contents of the portable tank. This requirement is consistent with the capabilities of current systems.

Proposal

7. On the basis of the previous discussion it is proposed to amend 6.7.2.6.3(a)(iv), 6.7.3.5.4 and 6.7.4.5.2 as follows:

> 6.7.2.6.3(a)(iv) Except for small portable tanks with a capacity of not more than 1,000 litres, the internal valve shall be fitted with an emergency closing mechanism that can be activated from a remote location that is located more than 3 meters from the discharge opening where the length of the portable tank allows, or on the end of the portable tank farthest away from the filling or discharge openings. For portable tanks used for the transport of Class 3 flammable liquids the emergency shut-off mechanism shall be capable of being thermally actuated at a temperature of not more than 120 °C. The actuating mechanism for the self-closing system shall be located as close as practicable to the primary discharge connection. The internal valve shall immediately start to close upon actuation. The internal valve shall remain securely closed and capable of retaining the contents of the portable tank when the actuating mechanism is thermally actuated, accidentally damaged or sheared off during transport.
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> 6.7.3.5.4 Except for small portable tanks with a capacity less than 1 000 litres, the internal shut-off valve for each filling and discharge opening located below the liquid level of portable tanks intended for the transport of flammable or toxic non-refrigerated liquefied gases shall be fitted with an emergency closing mechanism. The emergency closing mechanism shall be capable of being actuated from a remote location that is located more than 3 meters from the discharge

opening where the length of the portable tank allows, or on the end of the portable tank farthest away from the filling or discharge opening. It shall also be capable of being thermally actuated at a temperature of not more than 120 °C. The means by which the self-closing system is thermally activated shall be located as close as practicable to the primary discharge connection and shall be fully closed immediately upon actuation. If the actuating mechanism is thermally actuated or accidentally damaged or sheared off during transport, each internal valve shall remain securely closed and capable of retaining the contents of the portable tank

6.7.4.5.2 Each filling and discharge opening fitted on a portable tanks used for the transport of flammable refrigerated liquefied gases shall be fitted with at least three mutually independent shut-off devices in series, the first being a shut-off valve situated as close as reasonably practicable to the jacket, the second being a stop-valve and the third being a blank flange or equivalent device. The shut-off device closest to the jacket shall be fitted with an emergency closing mechanism. The emergency closing mechanism shall be capable of being actuated from a remote location that is located more than 3 meters from the discharge opening where the length of the portable tank allows, or on the end of the portable tank farthest away from the filling or discharge opening. It shall also be capable of being thermally actuated at a temperature of not more than 120 °C. The means by which the self-closing system is thermally activated shall be located as close as practicable to the primary discharge connection and shall be fully closed immediately upon actuation. If the actuating mechanism is thermally actuated or accidentally damaged or sheared off during transport, the valve shall remain securely closed and capable of retaining the contents of the portable tank.
