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## Economic Commission for Europe

### Inland Transport Committee

#### Working Party on the Transport of Dangerous Goods

##### Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods

Bern, 15-19 March 2021

Item 2 of the provisional agenda

##### Tanks

### **Revisit of the requirements of 6.8.3.2 in RID/ADR on items of equipment and automatic closing function of valves on connections to the vapour phase on tanks for flammable and toxic refrigerated liquefied and liquefied gases**

**Transmitted by the Government of the Netherlands<sup>\*</sup>, <sup>\*\*</sup>, <sup>\*\*\*</sup>**

#### *Summary*

- Executive summary:** Valves on openings in the vapour phase of tanks for flammable and toxic gases should close in the case of an emergency or automatically in the case of movement of the tank or fire, or manually from a safe distance. The wording of the requirements of 6.8.3.2 to 6.8.3.2.7 in RID/ADR should be improved in readability and to express this principle.
- Action to be taken:** Amend the wording of 6.8.3.2 in RID/ADR and introduce a transitional measure for tanks that do not yet comply.

## **Introduction**

1. At the autumn 2020 session of the Joint Meeting's Working Group on Tanks, the position of the Netherlands in informal document INF.13 was supported that the connection to the vapour phase of a tank for refrigerated Liquefied Natural Gas (LNG) should have, as a safety item, the automatic closing function. This line, or connection, is actively used during

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<sup>\*</sup> A/75/6 (Sect.20), para 20.51.

<sup>\*\*</sup> Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2021/11.

<sup>\*\*\*</sup> This document was scheduled for publication after the standard publication date owing to circumstances beyond the submitter's control.

loading and unloading and the valve should be regarded as a filling or discharge line and should close automatically in the case of a fire or movement or manually from distance in the case of an emergency.

2. It was also found that the wording of 4.3.2.2.3 was ambiguous and it was suggested that the Netherlands would revisit the wording taking into account the above-mentioned safety function.

## Proposals

### Proposal 1

3. Replace the wording of 6.8.3.2 to 6.8.3.2.7 in RID/ADR with the following (new text is marked in bold):

"6.8.3.2 *Items of equipment of tanks for the carriage of liquefied and refrigerated liquefied gases*

6.8.3.2.1 **Shells may be provided with, in addition to the openings prescribed in 6.8.2.2.2 and 6.8.2.2.4, openings for the fitting of gauges, thermometers, manometers and with bleed holes, as required for their operation and safety.**

6.8.3.2.2 **Thermometers, shall not project directly through the shell.**

6.8.3.2.3 **All openings, other than inspection openings and those accommodating safety valves and closed bleed holes, of tanks intended for the carriage of liquefied flammable and/or toxic gases shall, if their nominal diameter is more than 1.5 mm, be equipped with an internal stop valve.**

6.8.3.2.4 The internal stop-valve of all filling and all discharge openings of tanks

with a capacity greater than 1 m<sup>3</sup>

intended for the carriage **of flammable or toxic gases (liquefied and refrigerated liquefied)** shall be instant-closing and shall close automatically in the event of an unintended movement of the tank or in the event of fire. It shall also be possible to operate the internal stop-valve by remote control.

(ADR only)

However on tanks intended for the carriage of liquefied non-toxic flammable gases, the internal stop-valve with remote control may be replaced by a non-return valve for filling openings into the vapour phase of the tank only. The non-return valve shall be positioned internally in the tank, be spring loaded so that the valve is closed if the pressure in the filling line is equal to or lower than the pressure in the tank and be equipped with appropriate sealing<sup>17</sup>.

(RID only)

The device which keeps the internal closure open, e.g. a rail hook, is not a component of the wagon.

<sup>17</sup> The use of metal to metal sealing is not permitted.

- 6.8.3.2.5 Notwithstanding the requirements of 6.8.2.2.2, 6.8.3.2.3 and 6.8.3.2.4, tanks intended for the carriage of refrigerated liquefied gases may be equipped with external devices in place of internal devices if the external devices afford protection against external damage at least equivalent to that afforded by the wall of the shell.
- 6.8.3.2.6 **Openings situated in the upper part of tanks shall be equipped with, in addition to what is prescribed in 6.8.3.2.3, an external stop valve.**
- 6.8.3.2.7 **The closing device at the end of filling and discharge pipe shall consist of a blank flange or an equally reliable device. For tanks intended for the carriage of [non-flammable and/or non-toxic] refrigerated liquefied gases, these blank flanges or other equally reliable devices may be fitted with pressure-release openings of a maximum diameter of 1.5 mm."**

## Proposal 2

4. Insert new transitional measures for tanks for the carriage of flammable or toxic refrigerated liquefied gases as follows (new text is marked in bold)

- “1.6.3.xx Tank-wagons / Fixed tanks (tank-vehicles) and demountable tanks constructed before 1 January 2023 in accordance with the requirements of 6.8.3.2.3 in force up to 31 December 2022, but which are not equipped with the automatic closing function of the valves on openings in the vapour phase may continue to be used until the next intermediate or periodic inspection whichever comes first.**
- 1.6.4.xx Tank-containers constructed before 1 January 2023 in accordance with the requirements of 6.8.3.2.3 in force up to 31 December 2022, but which are not equipped the automatic closing function of the valves on the openings in the vapour phase may continue to be used until the next intermediate or periodic inspection whichever comes first.”**

## Justification

5. A consignor noticed that on newly approved tank-containers for the carriage of liquefied natural gas (LNG) only one valve and a blind flange was fitted to openings in the vapour phase without the automatic closing function. Before that two valves and a blind flange were fitted of which the closest valve to the shell was fitted in compliance with 6.8.3.2.3. In discussions with the competent authority it appeared that it was questioned if these openings should be considered as filling or discharge openings and if they should be provided with three closures in series, as required by current 6.8.3.2.7 and the automatic closing function of 6.8.3.2.3.

6. However, on tanks for refrigerated liquefied gases like LNG these lines are actively used during loading and discharge to regulate pressure inside the tank and the valves are open during handling. Regardless of the interpretation it was expressed that from a safety point of view these valves should close automatically in the case of an emergency.

7. When discussing this topic, it was felt that the wording of 6.8.3.2 to 6.8.3.2.7 could benefit in clarity from a review. In such the current requirements were placed in a new sequence; first general requirements, then internal stop valves and finally external stop valves and blind flanges. It should be reminded that the requirements modify or complement those in 6.8.2. Where possible, unnecessary wording was deleted to improve the reading.

8. Three closures in series are already applicable based on the tank code (B in the third position) for LNG (UN 1972) and hydrogen refrigerated (UN 1966) and 6.8.3.2.4. This would not require any transitional measure. However, the applicability of the instant automatic closing function of 6.8.3.2.3 for openings in the vapour phase may have led to different interpretations. Because this is a safety issue, existing tanks should be modified. For that reason, transitional measures are proposed to allow continued use until they can be modified before the next intermediate or periodic inspection.