

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

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Item 2 of the provisional agenda

Tanks

12 September 2019

Comment on document 2019/24: Clarification of protection required for fittings and accessories mounted on the upper part of vacuum-operated waste tanks

Transmitted by the Government of Switzerland

Introduction

1. At the meeting of the Working Group on Tanks at the March 2018 session of the Joint Meeting, the representative of the United Kingdom raised the long standing question whether vacuum-operated waste tanks in compliance with Chapter 6.10 of ADR must meet the roll-over protection requirements according to ADR 6.8.2.1.28, given that ADR 6.10.3.1 allows such equipment to be placed in the “protected area”. The discussion of informal document INF.17 at the September 2018 session showed that the views on the question were divided.

2. With document ECE/TRANS/WP.15/AC.1/2019/24, the United Kingdom submits a proposal taking into account the discussions in the Working Group on Tanks at the September 2011, March 2018, September 2018 and March 2019 sessions of the Joint Meeting.

3. After a careful review of the proposal by the United Kingdom and the several related documents, Switzerland has summarized the main aspects to enable the Joint Meeting to make a comprehensive review.

4. Furthermore, Switzerland believes that the formulation in proposal 1 by the United Kingdom is rather unusual and may lead to misinterpretation. It is not clear if the wording “unless the items of equipment are constructed in such a way that leakage from the tank would not occur ...” actually means “the requirements of 6.8.2.1.28 do not apply” or “if items of equipment are constructed in such a way that leakage from the tank would not occur, the requirements of 6.8.2.1.28 are deemed to be met”. We are of the opinion that the text could be improved and therefore submit two alternative proposals.

Requirements

5. ADR 6.8.2.1.28 requires:

“The fittings and accessories mounted on the upper part of the tank shall be **protected against damage caused by overturning**. This protection may take the form of strengthening rings, protective canopies or transverse or longitudinal members so shaped that effective protection is given.”

6. ADR/RID 6.10.1.2.1 states that:

“The special requirements of 6.10.2 to 6.10.4 **complete or modify** Chapter 6.8 and are applied to vacuum-operated waste tanks.

(...)

Vacuum-operated waste tanks shall comply with **all requirements of Chapter 6.8, except where overtaken by special requirements in this Chapter**. However the requirements of 6.8.2.1.19, 6.8.2.1.20, and 6.8.2.1.21 shall not apply.”

7. ADR/RID 6.10.3.1 requires:

“The items of equipment shall be so arranged as to be **protected against the risk of being wrenched off or damaged during carriage or handling**. This requirement can be fulfilled by placing the items of equipment in a so called "protected area" (see 6.10.1.1.1)”.

8. The "*protected area*" is defined in ADR/RID 6.10.1.1.1 as:

- (a) The lower part of the tank in a zone which extends over a 60° angle on either side of the lower generating line;
- (b) **The top part of the tank in a zone which extends over a 30° angle on either side of the top generating line;**
- (c) On the end front of the tank on motor vehicles;
- (d) On the rear end of the tank inside the protection volume formed by the device stipulated in 9.7.6

9. ADR/RID 6.8.2.2.1 requires:

“Suitable non-metallic materials may be used to manufacture service and structural equipment.

The items of equipment shall be so arranged as to be protected against the risk of being wrenched off or damaged during carriage or handling. They shall exhibit a suitable degree of safety comparable to that of the shells themselves, and shall in particular:

- be compatible with the substances carried; and
- **meet the requirements of 6.8.2.1.1.**

Piping shall be designed, constructed and installed so as to avoid the risk of damage due to thermal expansion and contraction, mechanical shock and vibration.

As many operating parts as possible shall be served by the smallest possible number of openings in the shell. **The leakproofness of the service equipment including the closure (cover) of the inspection openings shall be ensured even in the event of overturning of the tank**, taking into account the forces generated by an impact (such as acceleration and dynamic pressure). Limited release of the tank contents due to a pressure peak during the impact is however allowed.

The leakproofness of the service equipment shall be ensured even in the event of the overturning of the tank-container.

10. ADR/RID 6.8.2.1.1 requires:

“Shells, their attachments and **their service and structural equipment shall be designed to withstand without loss of contents** (other than quantities of gas escaping through any degassing vents):

- static and dynamic stresses in normal conditions of carriage as defined in 6.8.2.1.2 and 6.8.2.1.13;
- prescribed minimum stresses as defined in 6.8.2.1.15.”

11. Thus, all things considered and contrary to what is specified in paragraph 4 of ECE/TRANS/WP.15/AC.1/2019/24, the ADR/RID texts indicate clearly enough the

requirements for protection of service equipment in the event of overturning of the tank (see 6.8.2.2.1 respectively 6.8.2.1.1 ADR/RID).

12. Furthermore, Switzerland would like to point out that the requirements of 6.8.2.1.28 only apply to the road mode and not to the rail mode.

Proposals

13. Given that the requirements still appear to be unclear, it would seem that the text of ADR and if necessary RID should be amended to ensure a common interpretation. To help finding a suitable wording, a number of possibilities could be considered, depending on the nature of the items of equipment to be protected. Two possibilities at either end of the spectrum are set out below.

14. If ADR 6.10.3.1 is considered to **complete** ADR 6.8.2.1.28, this could be made clear by amending ADR 6.10.3.1 and taking the rail mode into account as follows:

Proposal 1a (ADR and RID)

Introduce new text to 6.10.3.1 ADR/RID to read (new wording in **bold** and underlined):

“6.10.3.1 The items of equipment shall be so arranged as to be protected against the risk of being wrenched off or damaged during carriage or handling, **including in the event of overturning of the tank**. This requirement can be fulfilled by placing the items of equipment in a so called "protected area" (see 6.10.1.1.1).”

Proposal 1b (ADR only, RID remains the same)

“6.10.3.1 The items of equipment shall be so arranged as to be protected against the risk of being wrenched off or damaged during carriage or handling. This requirement can be fulfilled by placing the items of equipment in a so called "protected area" (see 6.10.1.1.1). **When items of equipment are placed in the “protected area” at the top part of the tank according to 6.10.1.1.1 (b), the requirements of 6.8.2.1.28 are deemed to be met.**”

15. If ADR 6.10.3.1 is considered to **modify** ADR 6.8.2.1.28, this could be made clear by an amendment to the third paragraph of ADR 6.10.1.2.1 as follows:

Proposal 2 (ADR only, RID remains the same)

“Vacuum-operated waste tanks shall comply with all requirements of Chapter 6.8, except where overtaken by special requirements in this Chapter. However the requirements of 6.8.2.1.19, 6.8.2.1.20, ~~and~~ 6.8.2.1.21 **and 6.8.2.1.28** shall not apply.”

16. Depending on the decision taken by the Joint Meeting, transitional measures may be needed.