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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, 18–22 March 2013

Item 2 of the provisional agenda

Tanks**Chapter 6.10 Vacuum-operated waste tanks - Explosion-
pressure proof design of vacuum-operated tanks as an
alternative to flame traps****Proposal transmitted by Germany^{1,2}***Summary*

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| Executive summary: | This proposal aims at adding to Chapter 6.10 an explosion-pressure proof design for vacuum-operated tanks as an alternative to the mandatory flame traps for pumps which may create sparks. |
| Action to be taken: | Addition of an explosion-pressure proof design for vacuum-operated tanks to 6.10.3.8 (b) and introduction of a definition of "explosion-pressure proof tank" in 1.2.1. |
| Related documents: | Report of the working group on tanks ECE/TRANS/WP.15/AC.1/126/Add.1 (OTIF/RID/RC/2012-A/Add.1) paragraphs 11 to 14 and informal document INF.23 of the Joint Meeting in September 2007. |

¹ In accordance with the programme of work of the Inland Transport Committee for 2010–2014 (ECE/TRANS/208, para. 106, ECE/TRANS/2010/8, programme activity 02.7 (c)).

² Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2013/12.

Introduction

1. At the penultimate session of the Joint Meeting (Bern, 19 to 23 March 2012) the working group on tanks had in document ECE/TRANS/WP.15/AC.1/2012/2 (OTIF/RID/RC/2012/2) basically supported the German proposal to introduce an explosion-pressure proof design for vacuum-operated tanks as an alternative to flame traps (see also paragraph 11 of the report of the working group on tanks).
2. The proposal had not been adopted, though, as it had not yet been clarified how to uniformly dimension or inspect these tanks. Two implementation possibilities had been discussed:
 - TRT 006 which is used in Germany, see also informal document INF.23 of the Joint Meeting in September 2007; and
 - Standard EN 14460 "explosion resistant equipment".
3. One main difference between both texts is that the TRT 006 allows higher permissible stresses of the explosion-pressure in the tank shell (see also paragraph 12 of the report of the working group on tanks).
4. The meaning of explosion-pressure proof design and a way of how to uniformly implement it should be pointed out (definition in EN 14460). Germany had accepted to prepare a new proposal.

Proposal 1

5. Introduction of a definition of "explosion-pressure proof tank" in RID/ADR 1.2.1:
"*Explosion-pressure proof tank*" means a tank constructed in a way to withstand the presumed explosion-pressure without bursting, while permanent deformations are allowed."

Proposal 2

6. Introduction of the explosion-pressure proof design of tanks as an alternative to flame traps by complementing RID/ADR 6.10.3.8 (b):
"(b) A device to prevent the immediate passage of flame shall be fitted to both the inlet and outlet of a vacuum pump/exhauster unit which might provide an **ignition source** and which is fitted on a tank used for the carriage of flammable wastes **or the tank and the respective equipment shall be of that kind to withstand an explosion following a passage of flames in the tank without leakage of the tank (explosion-pressure proof tank)**".

Technical Implementation

7. The details of the explosion-pressure proof design of tanks should be fixed in a standard. The relevant standard for pressure tanks is EN 14025 (the other standards for tanks in Chapter 6.8 are not concerned by this). Standard EN 14025 contains under 5 "design" already a reference to an explosion-pressure proof design, this reference, however, is not further specified. Based on standard EN 14460 this standard should now be complemented by requirements on the explosion-pressure proof design. Parts of TRT 006

such as the minimum explosion-pressure of 9.7 bar (absolute) or the layout method being valid only for tanks without fittings (especially surge plates) could be kept.

8. CEN/TC 296 should be charged to add to standard EN 14025 the possibility of an explosion-pressure proof design for tanks (possibly in a separate annex to the standard as its revision is almost finished).

Transitional provisions

9. Until the revision of standard EN 14025 technical codes would enable the States to approve explosion-pressure proof tanks. The following texts could be used:

- Standard EN 14460 together with standard EN 14025 (the minimal explosion-pressure and the restriction to tanks without fittings could be taken from TRT 006); or
- TRT 006.

10. For already constructed tanks a transitional provision would be needed where standard EN 14025, to which the explosion-pressure proof design has been added, is cited in RID/ADR.

Justification

11. Vacuum-operated waste tanks often do not comply with RID/ADR 6.10.3.8 (b). The proposed amendment would introduce a design of these vacuum-operated tanks which complies with the rules and is justifiable in terms of security. This addition of an explosion-pressure proof design for tanks to standard EN 14025 would create uniform layout rules for this explosion-pressure proof design for tanks which is already permitted in RID/ADR (e.g. in RID/ADR 6.8.2.2.6).
