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Item 2 of the provisional agenda

Tanks

Report of an incident involving a propane tank

Transmitted by the Government of Belgium^{1, 2}

Summary

Executive summary:	The aim of this proposal is to protect more efficiently the equipment of fixed tanks (tank-vehicles) and tank-wagons in order to reduce the consequences and effects of accidents.
Action to be taken:	Evaluation by the working group on tanks.
Related documents:	None

Introduction

1. In May 2012 a propane (UN 1978) tank-vehicle was involved in an incident in Belgium. While reversing out, the tank-vehicle bumped into a railway bridge. Unfortunately the whole impact was made at the top of the tank on the bolt that was closing the hole used to drain air from the tank before the hydraulic pressure test. The bolt was ripped off by the force of the impact.

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/2013/21.

Tank before collision



Damaged tank (after a valve was placed to contain the gas leak)

2. Half of the nine tons of propane leaked before a valve was placed to contain the gas leak. Luckily there was no spark nor heat source and the gas did not catch fire, all the more so as the incident took place in a village next to a school and under a railway bridge.



3. Such an incident is very rare but is also potentially disastrous due to the materials involved. Liquefied petroleum gas (LPG) tank-vehicles are very numerous, so precautions have to be taken.

Background

4. According to 6.8.2.1.1, “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 [...]”.

5. According to 6.8.2.2.1, “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. They shall exhibit a suitable degree of safety comparable to that of the shells themselves [...] 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. [...]”.

Proposal

6. The first question is to know if 6.8.2.2.1 applies as such to a bolt. In other words, is it considered to be an “*equipment*”?

7. No specific special tank provision (TE) is required for flammable gases like propane (UN 1978). It could be considered to add a special provision for such gases that could be inspired on the first part of special provision TE19 used for class 6.1 materials :

“TE19 Fittings and accessories mounted in the upper part of the tank shall be either:

- inserted in a recessed housing; or*
- equipped with an internal safety valve; or*
- shielded by a cap, or by transverse and/or longitudinal members, or by other equally effective devices, so profiled that in the event of overturning the fittings and accessories will not be damaged.”.*

8. The tank working group is invited to consider these questions and propose appropriate measures.
