



OTIF/RID/CE/GTP/2015/4

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Original: German

RID: 5th Session of the RID Committee of Experts' standing working group
(Zagreb, 23 - 27 November 2015)

Subject: New requirements for tank-wagons for the carriage of flammable liquids in the
USA and Canada (DOT-117/TC-117)

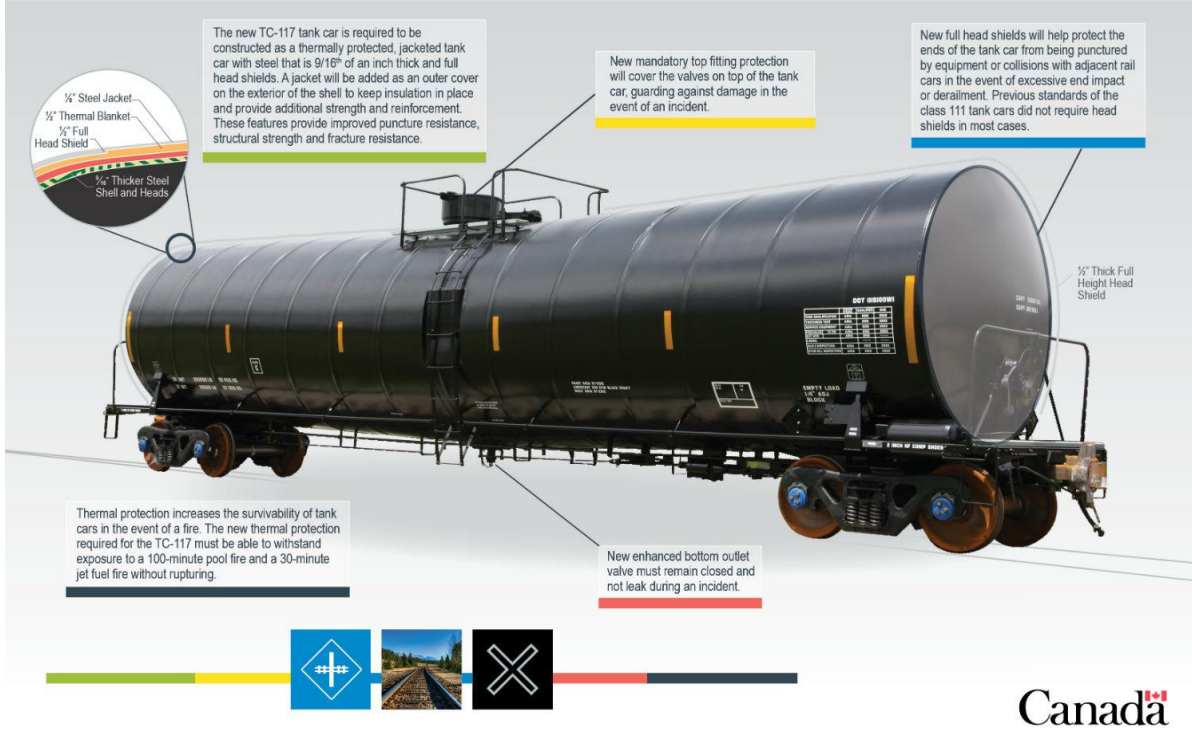
Proposal transmitted by Germany

Introduction

1. According to information available in Germany, new requirements for the construction and retrofitting of tank-wagons for the carriage of flammable liquids have entered into force in the USA and Canada (USA: DOT-117, Canada: TC-117). See also
USA: <http://www.dot.gov/briefing-room/final-rule-on-safe-rail-transport-of-flammable-liquids>
Canada: <http://www.gazette.gc.ca/rp-pr/p2/2015/2015-05-20/html/sor-dors100-eng.php>
2. Among other things, the new requirements provide for a greater wall thickness, head shields over the entire tank ends, thermal protection and new requirements for the top valves (protective collar) and devices to protect against the unintended opening of bottom valves, see also: <http://www.tc.gc.ca/eng/mediaroom/infographic-tc-117-tank-car-7610.html>.

ENHANCED SAFETY FEATURES

The new **TC-117 TANK CAR** standard includes several enhanced safety features to protect communities along Canada's railways



Canada

- Certain measures for retrofitting existing wagons are also being implemented within a prescribed timescale.

Proposal

- Germany requests the RID Committee of Experts' standing working group to check whether these new requirements that apply in the USA and Canada are also relevant to RID.
- If necessary, the requirements could be examined in detail in the RID Committee of Experts' working group on tank and vehicle technology.

Background information

- As at the end of 2013, the North American tank-wagon fleet included around 335,000 vehicles [1], of which around 272,000 tank-wagons complied with the "DOT-111" specification [2]. According to the North American regulations, this specification is prescribed for the carriage of dangerous substances (liquids and solids) of packing groups I, II and III, with the exception of classes 4.2, 4.3 and toxic by inhalation substances of Class 6.1 [3]. Compared with other tank specifications of the North American dangerous goods regulations, the technical requirements of specification "DOT-111" for the tanks of tank-wagons are modest. The tanks of this specification are of a self-supporting construction with a test pressure of at least 5.1 bar and a minimum wall thickness of 11.1 mm [4].
- Around 171,000 "DOT-111" tank-wagons are used for the carriage of dangerous goods [2]. The other tank-wagons are used for the carriage of other bulk goods, e.g. corn syrup or vegetable oil [5]. Most dangerous goods movements involve the carriage of dangerous goods of Class 3, primarily UN 1267 PETROLEUM CRUDE OIL and UN 1170 ETHANOL in this case. Around 94,000 "DOT-111" tank-wagons are used for this type of transport [2].

8. Since 1991, the USA's transport safety authority (NTSB) has pointed out in various studies and investigation reports that in accident scenarios, "DOT-111" specification tanks carry a significantly higher risk of leakage than tanks of other specifications [2]. The high probability of wall penetrations and leaks in the area of the fittings (as a result of being wrenched off or being opened unintentionally) was particularly emphasised [2] [6] [7]. The NTSB recommendations resulting from the investigations mainly concerned increasing the minimum wall thicknesses, fitting protective shields at the ends of the wagon and protecting the valves [2] [6] [7]. However, they have not yet been taken into account in the dangerous goods regulations.
9. As of 2009, the tank-wagon industry, via the Association of American Railroads (AAR), developed a new standard for "DOT-111" specification tanks on its own initiative ("P-1577" and "CPC-1232"). The standard was applied to tanks newly built from 1 October 2011 [2] [8]. Among other things, this standard provides for the fitting of protective shields, protection of top fittings, a minimum wall thickness of 12.7 mm and central buffer couplings fitted with additional protective devices [8]. Around 14,000 tank-wagons used for the carriage of dangerous goods comply with this standard (as at the end of 2013) [2].
10. After the serious tank-wagon accident in Lac-Mégantic in the summer of 2013, the section of the US Department of Transportation (DOT) responsible for pipeline and hazardous materials safety (PHMSA) published proposals in September 2013 to amend the dangerous goods regulations, particularly specification "DOT-111", and asked for comments. These proposals were the result of petitions by various industry associations and the NTSB [9]. In July 2014, the DOT published a revised and consolidated proposal to amend the dangerous goods regulations [10]. Compared with specification "DOT-111" and industry standard "CPC-1232", the technical requirements for tanks for the carriage of dangerous substances of Class 3 have been made more stringent (new specification "DOT-117"). For example, the new specification requires a minimum wall thickness of 14.3 mm, thermal insulation and devices to prevent the unintentional opening of bottom valves [10] [11]. Transitional provisions have also been included for the retrofitting of existing tanks and the continued use of "DOT-111" tank-wagons (until 2020) and "CPC-1232" tank-wagons (deadline under discussion) [12].

List of sources:

- [1] Association of American Railroads: Railroad Tank Cars
- [2] Center for Strategic & International Studies: Safety of Crude Oil by Rail (2014)
- [3] Code of Federal Regulations – Title 49, §173.240 ff.
- [4] Code of Federal Regulations – Title 49, §179.201-1
- [5] Railway Supply Institute: Docket No. PHMSA-2012-0082, Hazardous Materials: Rail Petitions and Recommendations to Improve the Safety of Railroad Tank Car Transportation (RRR) – Comments of the Railway Supply Institute Committee on Tank Cars (2013)
- [6] NTSB: Safety Recommendation R-12-005-008 (2012)
- [7] NTSB: Safety Study – Transport of Hazardous materials by Rail (1991)
- [8] W. Vantuono: Re-inventing the DOT 111 (Railway Age, 2014)
- [9] Department of Transportation (DOT), PHMSA: 78 FR 54849 – ANPRM, Rail Petitions and Recommendations to Improve the Safety of Railroad Tank Car Transportation (RRR) (2013)
- [10] Department of Transportation (DOT), PHMSA: 79 FR 45016 – NPRM, Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains (2014)
- [11] WBR Digital/Logichem: Retrofitting the American Chemical Supply Chain [A Whitepaper] (2014)
- [12] K. Gainey: Regulatory Update on Transportation of Crude Oil by Rail (The Federal Lawyer, 2014)