

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

21 September 2016

Report of the Working Group on Tanks

1. The Working Group on Tanks met from 19 to 21 September 2016 in Geneva on the basis of the mandate from the RID/ADR/ADN Joint Meeting, under the chairmanship of Mr. Arne Bale (United Kingdom) Mr. Kees de Putter (Netherlands) as secretary. The relevant documents were submitted to the plenary session and transferred to the Working Group for consideration.

2. The Working Group on Tanks, consisting of 25 experts from 13 countries and 7 non-governmental organizations, dealt with the following official and informal documents:

Documents:

- ECE/TRANS/WP.15/AC.1/2016/20 (CEN)
- ECE/TRANS/WP.15/AC.1/2016/21 (EIGA)
- ECE/TRANS/WP.15/AC.1/2016/23 (Russian Federation)
- ECE/TRANS/WP.15/AC.1/2016/25 (the Netherlands)
- ECE/TRANS/WP.15/AC.1/2016/26 (the Netherlands)
- ECE/TRANS/WP.15/AC.1/2016/31 (the Netherlands)
- ECE/TRANS/WP.15/AC.1/2016/36 (CEN)
- ECE/TRANS/WP.15/AC.1/2016/37 (France)

Informal documents:

- INF. 6 (Russian Federation)
- INF. 8 (AEGPL)
- INF. 9 (AEGPL)
- INF. 16 (United Kingdom)
- INF. 19 (United Kingdom)
- INF. 21 (Germany)
- INF. 23 (Germany)
- INF. 28 (Portugal)
- INF. 31 (USA)

Item 1: ECE/TRANS/WP.15/AC.1/2016/20 (CEN) – Request for advice from the Working Group on Tanks.

3. The request for advice by CEN concerned standard EN 16522 for flame arrestors. No remarks were made on the technical contents of the standard by the group other than an observation that the names used for the tests of flame arrestors, i.e. “end of line flame arrestor”, may lead to questions in practice.

4. On the question whether to make reference to the standard in 6.8.2.6.1 or include the information directly in the regulation in 6.8.2.2.3 it was the opinion of the majority of the experts that inclusion of some requirements in 6.8.2.2.3 would be preferred. It was also decided to limit the scope of the test for flame arrestors to those for breather devices and not to vacuum valves.

5. The expert of the Netherlands was asked to develop wording in collaboration with the expert from France for the next session.

Item 2: ECE/TRANS/WP.15/AC.1/201621 (EIGA) – Service equipment on tanks.

6. The chairman of the informal working group on “Provisions on equipment of tanks and pressure receptacles” presented the document with a number of questions on the approval of service equipment of tanks.

7. Several experts mentioned that in the informal working group on “the inspection and certification of tanks” the approval of service equipment was under consideration that may resolve these questions. It was suggested to await the outcome of the developments which were due for the next session in March 2017.

Item 3: ECE/TRANS/WP.15/AC.1/2016/23 (Russian Federation) – Documentation – Additional provisions for Class 2.

8. To protect empty tank wagons for the carriage of liquefied gases against implosion during very low ambient temperatures SMGS Annex 2 prescribes a residual pressure to be maintained after discharge. This residual pressure should be indicated in the transport document. After discussion of this subject in the RID Committee of Experts’ standing working group 23-27 November 2015 it was suggested to present this to the Tanks working group of the Joint meeting for further study.

9. Several experts remarked that protection against implosion based on residual pressure of liquefied gases was only useful in combination with the temperature of the remaining gas and tank after discharge in combination with the properties of the particular gas. It was also said that it would be preferable to determine a safe minimum temperature depending on the residual pressure, temperature after discharge and type of gas. Several experts were not in favour of the proposal as it stood. Entering details in the transport document were considered unnecessary. Also taking into account that 4.3.3.3.4 of RID/ADR already includes provisions to prevent implosion in case low ambient temperatures are expected.

Item 4: ECE/TRANS/WP.15/AC.1/2016/25 (the Netherlands) – General requirement for safety valves on tanks and pressure rating of bursting discs + INF 9 AEGPL.

10. The Netherlands proposed to include a pressure rating for bursting discs in relation to the start to discharge pressure of the safety valve and providing more details on the requirements for safety valves. AEGPL expressed concern regarding effect on safety valves for gases.

11. Concerning the proposal for safety valves it was questioned if all details were needed as details were already given in the definition in 1.2.1. It was confirmed that this proposal did not modify the requirements for safety valves for tanks for the carriage of gases.

12. Several experts expressed support for including a pressure setting for bursting discs as this would improve harmonisation by removing the role of the competent authority. Although 10% above the start to discharge pressure of the safety valve is commonly used a performance requirement description was also suggested.

13. As 6.8.2.2.10 addresses hermetically closed tanks it was considered to also apply to tanks for the carriage of gases as this was not modified in 6.8.3. In 4.3.1.1 concerning the tank codes for gas tanks, hermetically closed tanks are possible. However if the link in the table of 4.3.1.1 to the definition of hermetically closed tank is followed it appears that the

definition only refers to tanks for substances for Class 3 to 9. Where some experts were of the opinion that hermetically closed tanks for gases should not have safety valves, others stated that tanks with a safety valve and bursting disc did exist.

14. The group did not feel in a position to proceed before the inconsistency with the definition of hermetically closed tanks for the carriage of gases was resolved. It was decided to ask EIGA if tanks for the carriage of gases with safety valves and bursting discs exist and if so what the set pressures are.

Item 5: ECE/TRANS/WP.15/AC.1/2016/26 (the Netherlands) – Miscellaneous topics on tanks and INF 8 (AEGPL).

15. Three topics concerning safety were identified during evaluation of older national guidelines in the Netherlands.

Topic 1 Fire safe design of internal stop valves.

16. It is proposed to include a requirement for fire safe design in the regulations. AEGPL in its document questioned the additional value of a fire safe design because the valve and seating would be cooled by the liquefied gas. It was also expressed that such internal stop valves are not available and that no situations are known where failing of a valve in fire conditions led to leakage. It was also remarked that fire scenarios were in principle not part of 6.8, besides a requirement for tank for liquefied flammable or toxic gases that valves should close automatically in the event of a fire.

17. Others said that it was not clear exactly what was meant by fire safe design. However the standard EN ISO 10497, which is referenced in EN 12252 concerning equipment for LPG tankers, includes tightness requirements after fire testing. However the actuators of the valves are excluded from the test.

18. EN 12252 does not clearly define to which valves EN ISO 10497 applies. AEGPL was requested to check the intention of the reference with CEN TC 286 and report back.

Topic 2: Gauge glasses.

19. Level gauges of transparent material are prohibited for gas tankers. In 6.10, which modifies 6.8.2, sight glasses on the shell are allowed. To clarify the situation and improve the use of terms it is proposed to include the wording used for these level gauges used in 6.7 in 6.8.2.2.

20. One expert mentioned that in the past gravity discharge tanks for heating oil were approved with level gauges. Another expert said that transparent parts in the pipework and manhole covers were approved for measuring instruments and in connection with the VOC directive but were not in direct contact with the substance during carriage. Several alternative texts were considered but the text from 6.7 was favoured. Although there was agreement in principle it was decided to keep the wording in square brackets to check the need of a transitional measure is required.

Proposal 1: *Introduce a new paragraph in 6.8.2.2.*

[Glass level-gauges and level-gauges made of other fragile material, which are in direct communication with the contents of the shell, shall not be used.]

Proposal 2: Delete the first sentence of 6.8.3.2.6 to read (deleted wording ~~stricken~~ through):

[6.8.3.2.6 ~~If the tanks are equipped with gauges in direct contact with the substance carried, the gauges shall not be made of a transparent material.~~ If there are

thermometers, they shall not project directly into the gas or liquid through the shell.]

Proposal 3: Amend the first paragraph of 6.10.3.8 (f) to read (new wording in *italic script*, deleted wording ~~stricken~~ through):

[(f) The tank, or in case of compartmented tanks, every compartment, shall be equipped with a level indicating device. *Glass level-gauges and level-gauges of other suitable transparent material* ~~Sight-glasses~~ may be used as level indicating devices provided:]

Topic 3: prevention of water ingress in safety valves.

21. Safety valves for tanks for the carriage of gases may be of a design that collects water. In case the collected water is frozen the safety valve may not operate properly. There was general agreement in the group for this proposal in a modified form. A transitional measure was deemed necessary.

Proposal 4: Introduce a new paragraph at the end of 6.8.3.2.9 to read (new wording in *italic script*):

Safety valves that may collect water, for example due to rain or spray, which would prevent their correct functioning, for example if the water freezes, shall be provided with a protective cap. The protective cap shall not affect the performance of the valve.

Proposal 5: Introduce a new transitional measure in 1.6.3 and 1.6.4 to read:

1.6.3x/4y

Safety valves meeting the requirements applicable up to 31 December 2018 but which do not meet the requirements of 6.8.3.2.9 regarding the protective cap applicable from 1 January 2019 may continue to be used [until the next intermediate or periodic inspection after 1 July 2019].

Item 6: ECE/TRANS/WP.15/AC.1/2016/31 (the Netherlands) – Report of the working group on tanks with a protective lining or coating.

22. The proposals of the working group on tanks with a protective lining or coating were discussed and several improvements were made to the proposed amendments.

23. Although it was remarked that pH value is not always an indicator of corrosivity and the list of UN numbers is not exhaustive, the principle of regulating the use of aluminium alloy lined tanks by including a special provision TU in 4.3.5 against particular UN numbers was accepted. This solution would prevent the use in practice of tanks with an aluminium shell and a protective lining for substances with clearly identified as having a significant corrosive effect on aluminium alloy.

An alternative approach based on the application of classification criteria for corrosivity (table of 2.2.8) was discussed. It was agreed that this could be a future project that should not stop the option chosen by the working group to be adopted.

24. Item 6 and 8 of the annex to the report of the working group were not adopted as this did not add additional value and would be more appropriate to be included in standard EN 12972.

Proposal 6: Introduce a new definition and foot note in 1.2.1 to read:

“Protective lining” (for tanks) means a lining or coating protecting the metallic tank material against the substances to be carried.

Note: This definition does not apply to a lining or coating used only to protect the substance to be carried.”

Proposal 7: Introduce a new transitional measure 1.6.3.xx and 1.6.4.xx to read:

Tank wagons / Fixed tanks and demountable tanks / Tank-containers constructed before 1 July 2019 in accordance with the requirements in force up to 31 December 2018, used for the carriage of substances which do not conform to the requirements of 4.3.5 TUyy applicable from 1 January 2019 may continue to be used for the carriage of these substances until 1 January 2023.

Proposal 8: Introduce a new special provision in 4.3.5 of RID/ADR to read:

“TUyy Tanks with a shell constructed of aluminium alloy, including those with a protective lining, shall only be used if the pH value of the substance is not less than 5.0 and not more than 8.0”

Proposal 9: Introduce a special provision TUyy in column 13 of Table A of 3.2.1 of RID/ADR for:

UN1755 PG II and PG III, UN1778 PG II, UN1779 PG II, UN 1788 PG II and PG III, UN1789 PG II and PG III, UN 1791 PGII and PG III, UN 1803PG II, UN 1805 PG III, UN 1814PG II and PG III, UN 1819 PG II and PG III, UN1824 PG II and PG III, UN 1830 PG II, UN 1832 PG II, UN 1840 PGIII, UN 1906 PG II, UN 2031 PG II, UN 2581 PG III, UN 2582 PG III, UN2586 PG III, UN2693 PG III, UN2796 PG II, UN3264 PG II and PG III

Proposal 10: Amend the first paragraph of 6.8.2.1.9 to read (new wording in italic script) (only relevant for the English version):

The materials of shells or of their protective linings, which are in contact with the contents, shall not contain substances liable to react dangerously (see "Dangerous reaction" in 1.2.1) with the contents, to form dangerous compounds, or ~~substantially~~ *appreciably* weaken the materials.

Proposal 11:

Replace the wording “an ebonite or thermoplastic coating“ by ” *a protective lining*“ after the second set of indents of 6.8.2.2.2.

Proposal 12: Introduce a new paragraph at the end of 6.8.2.4.2 and 6.8.2.4.3 to read:

Protective linings shall be visually examined for defects. In case defects appear the condition of the lining shall be evaluated by appropriate test(s).

Item 7: ECE/TRANS/WP.15/AC.1/2016/36 (CEN) – Request for clarification on the meaning of “in special cases” in footnote 10 of 6.8.2.4.1.

25. The working group considered the request by CEN/TC 296/WG5, but was not able to determine definitively what is legally meant by “special cases”.

26. Looking back, it appeared that the term “special cases” was introduced in ADR in the 1970s to allow the hydraulic pressure test with water to be replaced with a pressure test

using another liquid or gas with the agreement of the competent authority. Previously, for some types of tanks, a tightness test was prescribed instead of the hydraulic pressure test.

27. Recalling the report of the previous session, the working group was pleased to note that CEN/TC 296/WG5 has initiated a new work item to develop a specific standard concerning testing with a gas for use at the discretion of the competent authority. It was suggested that the good experience with gas in the UK and the Netherlands could be used as a basis for this work.

Item 8: ECE/TRANS/WP.15/AC.1/2016/37 (France) – Transport of tanks for Bromine after the validity of the annual inspection, INF 16 (UK) and INF 31 (USA).

28. The working group confirmed that the possibility to carry a tank after the expiry date of the inspection did not apply to the annual inspection of the lining prescribed in special provision TT2 of 6.8.4.

29. To amend the regulations the working group expressed support for the proposal in INF 31 by the USA. Once this issue had been resolved for portable tanks there may be a need to address it for RID/ADR tanks.

Item 9: INF 6 (Russian Federation) - Proposal for the amendment to Chapter 4.3, Item 4.3.4.1.3 of the RID/ADR and INF 19 (UK).

30. The working group agreed with the proposal by the Russian Federation to give the information in 4.3.4.1.3 in a tabular form as modified by the proposal in INF 19 of the UK.

31. The secretariat is requested to complete the tables as appropriate for RID and ADR.

Item 10: INF 21 (Germany) - Information about dangerous goods used for cooling tanks or MEGC's.

32. It was confirmed that no regulations on marking of the cooling substance is required in RID/ADR. EIGA mentioned that all tanks are voluntary marked to warn of the permanent release of nitrogen during carriage. Because of stowage regulations for sea transport (stowage category "D") these tanks can be placed only on deck where ventilation is no problem. Portable tanks will on the rail and road only be carried on container vehicles so that no ventilation problems are to be expected. No expertise was available in the group to answer if the stowage requirement for sea transport also applied for carriage on inland waterways.

Item 11: INF 23 (Germany) – Interpretation of the diameter in 6.8.2.18 and 6.8.2.1.19 of RID/ADR.

33. Concerning the question by Germany if the diameter intended in 6.8.2.1.18 and 6.8.2.1.19 was the internal or external diameter, the group was of the opinion that the internal diameter was meant in line with 6.8.2.1.17.

Item 12: INF 28 (Portugal) – Particulars prescribed on tank plates.

34. The reading of the regulation by Portugal was confirmed by the group. It was questioned if the intention of the marking was correctly regulated for this application and that information on the actual load would be found in the transport document and the orange plate. It was also noted that a reference to EN 15877:2012 was recently included in RID and that due to late availability of the document the contents could not be checked.
