

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

17 March 2021

Report of the Working Group on Tanks

1. The Working Group on Tanks met from 15 to 17 March 2021 on a virtual basis on 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. For the Working Group on Tanks 43 experts registered for participation from 15 countries and 8 non-governmental organizations. They dealt with the following official and informal documents:

Documents:

- ECE/TRANS/WP.15/AC.1/2021/3 (UIP)
- ECE/TRANS/WP.15/AC.1/2021/5 (France)
- ECE/TRANS/WP.15/AC.1/2021/6 (Germany)
- ECE/TRANS/WP.15/AC.1/2021/8 (Belgium)
- ECE/TRANS/WP.15/AC.1/2021/10 (Poland)
- ECE/TRANS/WP.15/AC.1/2021/11 (Netherlands)
- ECE/TRANS/WP.15/AC.1/2021/19 (United Kingdom)
- ECE/TRANS/WP.15/AC.1/2021/21 (OTIF)

Informal documents:

- INF.9 (ITCO)
- INF.18 (OTIF)
- INF.11 (United Kingdom)
- INF.21 (EIGA)
- INF.12 (Netherlands)
- INF.13 (CEN)
- INF.23 (Germany and UIP)
- INF.31 (United Kingdom)
- INF.14 (Netherlands and UIP)
- INF.35 (France)
- INF.15 (United Kingdom)
- INF.37 (UIC)
- INF.16 (Poland)

Section 1: Outcome of discussions requiring endorsement by the Joint Meeting.

Item 1: ECE/TRANS/WP.15/AC.1/2021/8 (Belgium) – Extra-large tank-containers: Manholes and dome covers, ECE/TRANS/WP.15/AC.1/21 (OTIF) and INF.23 (Germany and UIP).

3. There was general consensus among the experts for the application of manhole covers designed for a test pressure of not less than 4 bar. The application would be limited to tanks for the carriage of liquids and possibly solids in the molten state. Tanks for powdery or granular substances and gases would not be affected respectively due to lack of surge and higher calculation pressures of tanks and manhole covers. It was decided to keep the proposed text in square brackets awaiting the development of specific criteria for these tank-containers. It was decided to include the new provisions in RID and ADR to enable their future use on the road.

4. The development of a specific definition for “extra-large tank-container” was supported as several additional requirements may apply. However, it proved impossible to develop a definition during the session as criteria to distinguish these particular containers were not yet clear. It was felt that not only capacity but also maximum gross weight and external dimensions may be criteria.

5. Concerning INF.23, no conclusions could be reached on the issue of specific accelerations that would apply to these tank-containers during shunting above the standard 2g for RID and ADR. As this was a typical rail issue it was felt that this should be further discussed in the RID Committee of Experts’ standing working group.

6. Although all known extra-large tank-containers complied with the new provision it was decided to include a new transitional measure in case any other extra-large tank-containers existed. It was decided to keep the transitional measure in square brackets together with the proposed new text for 6.8.2.2.4 for further consideration.

Proposal 1: in 6.8.2.2.4 of RID and ADR include new wording on the right hand side after the first sentence (new text in Italic script):

["These openings for tank containers with a capacity of [more than 40,000 litres/36,000 kg gross weight] intended for the carriage of [liquids] [substances in the liquid state] which are not divided by partitions or surge plates into sections of not more than 7,500 litres capacity shall be provided with closures designed for a test pressure of at least 0.4 MPa (4 bar). Hinged dome covers for these tank-containers with a test pressure of more than 0.6 MPa (6 bar) shall not be permitted."]

Proposal 2: introduce a new transitional measure to read:

[1.6.4.xx Tank-containers constructed before 1 July 2023 in accordance with the requirements in force up to 31 December 2022 but which do not conform to the requirements of 6.8.2.2.4 second paragraph applicable from 1 January 2023 may still be used.]

Item 2: ECE/TRANS/WP.15/AC.1/2021/19 (United Kingdom) – Clarifying inspection expiry dates in Chapters 6.8, 6.10 and 6.12

7. The experts supported the amendments proposed to clarify the inspection dates and to harmonize with the terms used in 6.7. The amendments would apply in principle to the English version of RID and ADR but there are consequential amendments in other language versions.

Proposal 3: amend 6.8.2.4.3, 6.8.3.4.6, 6.8.4, 6.10.4 and 6.12.3.2.6 to read (new wording underlined and deleted wording stricken through):

6.8.2.4.3 *Shells and their equipment shall undergo intermediate inspections ~~at least~~ no later than ~~every~~*

four years (RID) /three years (ADR) | two and a half years

after the initial inspection and each periodic inspection. These intermediate inspections may be performed within three months before or after the specified date.

However, the intermediate inspection may be performed at any time before the specified date.

If an intermediate inspection is performed more than three months before the ~~due~~ specified date, another intermediate inspection shall be performed ~~at the latest no later than every~~

Four years (RID)/three years(ADR) | two and a half years

after this earlier date.”

6.8.3.4.6 “For tanks intended for the carriage of refrigerated liquefied gases:

(a) By derogation from the requirements of 6.8.2.4.2, the periodic inspections shall ~~take place be~~ performed no later than

~~at least no later than~~ after eight years | ~~at least no later than~~ after eight years
(RID) /six years (ADR)

~~of service~~ after the initial inspection and thereafter ~~at least no later than~~ every 12 years.

(b) By derogation from the requirements of 6.8.2.4.3, the intermediate inspections shall ~~take place at~~ least be performed no later than every six years after each periodic inspection.”

6.8.4 Special provisions (d) Test (TT)

“**TT3** By derogation from the requirements of 6.8.2.4.2 periodic inspections shall ~~take place be~~ performed at least no later than every eight years and shall include a thickness check using suitable instruments. For such tanks, the leakproofness test and check for which provision is made in 6.8.2.4.3 shall be ~~carried out~~ performed at least no later than every four years.”)

“**TT4** (RID only) Tanks shall be inspected no later than every

4 years | 2½ years

for resistance to corrosion, by means of suitable instruments (e.g. by ultrasound).”

“**TT5** The hydraulic pressure test shall ~~take place be~~ performed at least no later than every

4 years (RID) /3 years.(ADR) | 2½ years.”

“**TT6** The periodic inspection shall be ~~carried out~~ performed at least no later than every 4 years (RID) /3 years (ADR).”

“**TT10** The periodic inspections according to 6.8.2.4.2 shall ~~take place be~~ performed at least no later than every:

4 years (RID)/ 3 years (ADR) | 2½ years.”

”

6.10.4 (ADR) “Vacuum-operated waste tanks shall be subject no later than every three years for fixed tanks or demountable tanks and ~~at least~~ no later than every two and a half years for tank-

containers and tank swap bodies to an examination of the internal condition, in addition to the inspection according to 6.8.2.4.3.”

6.10.4 (RID) “Vacuum-operated waste tanks shall be subject ~~at least~~ **no later than** every two and a half years to an examination of the internal condition, in addition to the inspection according to 6.8.2.4.3.”

6.12.3.2.6 (ADR only) “The requirements owner of the MEMU. Shells and their equipment shall be subject to visual examination of their external and internal condition and a leakproofness test to the satisfaction of the competent authority ~~at least~~ **no later than** every three years.”

Item 3: ECE/TRANS/WP.15/AC.1/2021/ INF 11 - Clarification of the requirements for non-destructive tests in RID/ADR 6.8.2.1.23 (United Kingdom)

8. The document proposed several improvements to 6.8.2.1.23 concerning welding and inspection of welds. The proposed amendments could be divided into 4 parts. There was consensus;

- for moving the last sentence of the first paragraph to the end of the second paragraph,
- for inserting a new paragraph before the last one of 6.8.2.1.23 after discussion and modification of the wording,
- not to adopt the proposal for the last paragraph of 6.8.2.1.23. Giving an exhaustive list of involved parties in construction, maintenance and repair of tanks could result in some parties not feeling obliged to follow the requirements of 6.8.2.1.23, and
- for the modification of the table in 6.8.2.6.2 for EN 12972:2018 as this would make the standard applicable for the welding requirement.

Proposal 4: amend the first and second paragraph of 6.8.2.1.23 to read (deleted wording stricken through and relocated wording underlined):

“6.8.2.1.23 *Welding and inspection of welds*
The inspection body (including any heat treatments required) has been demonstrated by tests. ~~Non-destructive tests shall be carried out by radiography or by ultrasound⁷ and shall confirm that the quality of the welding is appropriate to the stresses.~~

The following checks shall be carried out for welds made by each welding process used by the manufacturer in accordance with the value of the coefficient λ used in determining the thickness of the shell in 6.8.2.1.17. Non-destructive tests shall be carried out by radiography or by ultrasound⁷ and shall confirm that the quality of the welding is appropriate to the stresses.

Proposal 5: insert a new penultimate paragraph to read (new wording underlined):

“Welds made during repairs or alterations shall be assessed as above and in accordance with the non-destructive tests specified in the relevant standard(s) referenced in 6.8.2.6.2.”

Proposal 6: amend the third column of the table of 6.8.2.6.2 for EN 12972:2018 to read (new wording underlined):

EN 12972:2018	Tanks for transport of dangerous goods – Testing, inspection and marking of metallic tanks	<u>6.8.2.1.23</u> 6.8.2.4 6.8.3.4	Mandatorily from 1 July 2021
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Item 3: ECE/TRANS/WP.15/AC.1/2021/ INF 14 – Dry Break Coupling (Netherlands / UIP)

9. Already in the autumn session of the Joint Meeting in 2013 the topic of the use of so-called “dry-break couplings” was discussed. At that time there was agreement that these could be used as second or third closures in series in bottom filling- and discharge lines. However a modification to the text had not been prepared for a future session.

10. Option 1 was preferred by the experts as the additional wording “and similar systems” in option 2 was found to lead to unwanted interpretations. As there was consensus between the experts it was proposed to adopt option 1 with editorial modifications.

Proposal 6: Introduce a new footnote 9 at the end of the 7th paragraph of 6.8.2.2.2 and renumber following footnotes accordingly:

"9 The mode of operation of dry break couplings is self-closing. Consequently, an open/closed indicator is not necessary. This type of closure shall only be used as a second or third closure."

Section 2: Results of discussions on documents that do not require endorsement of the outcome.

Item 4: ECE/TRANS/WP.15/AC.1/2021/3 (UIP) – Clarification on using tanks after the deadline specified for the next test or inspection, ECE/TRANS/WP.15/AC.1/2021/10 (Poland), INF.16 (Poland) and INF.37 (UIC).

11. 6.8.2.4.3 allows the intermediate inspection to be performed up to 3 months after the specified date. The question is what is allowed in this 3 months period. Certain experts were of the opinion that the tank could be filled, carried and emptied as normal during this period given that the periodic inspection is still valid and in 4.3.2.3.7 no reference is made to the intermediate inspection, while others were of the opinion that the tank could only be carried and emptied if filled before this period in line with 6.7.

12. During discussion a consensus did not emerge other than to agree that a common approach was needed and that the deliberations of the Working Group on Tanks would benefit from an exchange of views in the Plenary.

13. It was considered that safety would not necessarily be compromised, and it was pointed out that the flexibility to perform the intermediate inspection 3 months before or after the specified date was agreed during the autumn 2006 session of the Joint Meeting (see ECE/TRANS/WP.15/AC.1/104/Add.1 paragraph 6). At that time the working group on tanks concluded that: "It was unanimously agreed that flexibility in terms of timing should be shown in respect of only the intermediate inspection, and not the periodic inspection".

Item 5: ECE/TRANS/WP.15/AC.1/2021/6 (Germany) – Vacuum-operated waste tanks: Non-electrical explosion protection.

14. When flammable substances are to be handled by vacuum-operated waste tanks ignition of the vapours shall be prevented by flame arrestors, spark free design of the pump/exhauster or the tank shall be explosion pressure shock resistant. So called “liquid ring” pumps are considered to be of a spark free design. After recent evaluations in Germany it was felt that there may be risks in particular if the supply of water was insufficient. Therefore it was proposed that the design should be checked against standard ISO 80079-36/37 for non-electrical explosion protection.

15. Several experts expressed the view that these pumps have not given any problems with ignition in the past. It was also said that if new standards have become available that these should be taken into account. Questions were asked about the availability of these pumps and the additional costs. As a

consequence of complying with the standard it was said that introducing sensors that check the supply of water and flow into the pump would be needed. It was remarked that we could also include technical provisions for this kind of pump. It was agreed that 6.10.3.8 would be the better place for such provisions. The representative of Germany took note of the remarks made, with the intention to come back to the topic at a future session.

Item 6: ECE/TRANS/WP.15/AC.1/2021/11 (Netherlands) – Revisit of the requirements of 6.8.3.2 in RID/ADR on items of equipment and automatic closing function of valves on connections to the vapour phase on tanks for flammable and toxic refrigerated liquefied and liquefied gases and INF.21 (EIGA).

16. Most experts expressed support in principle for the proposals made by the Netherlands. It was also expressed that Refrigerated Liquefied Hydrogen may require a different approach and that chapter 6.7 should also be addressed. It was proposed to organize an ad-hoc working group dealing with the specific issues. The expert of the Netherlands agreed that some further improvements are needed but stressed that some clarification on the equipment on LNG should be included in RID/ADR 2023.

Item 7: INF.9 (ITCO) – Adoption of the UN Model Regulations on fibre reinforced plastics portable tanks into RID/ADR

17. The Working Group on Tanks was asked to discuss INF.9 from ITCO to prepare for the discussion in Plenary. ITCO explained that sufficient resilience was not proven by the Informal Working Group on Fibre Reinforced Plastics portable tanks of the Sub-Committee of Experts on the Transport of Dangerous Goods (TDG). The intention was to raise this at the June 2021 session of the TDG. The ITCO paper asked for the adoption of the new chapter 6.9 in RID/ADR to be deferred until the issue was resolved.

18. The expert of ITCO presented research reported by BAM which demonstrated that an energy level of 22 kJ was commensurate with a thickness of 6 mm in mild steel, which the ITCO paper considered would be useful in determining the resilience of other materials. Several experts mentioned that minimum wall thickness in metal could not easily be translated to an equivalent thickness in FRP material as such materials behave differently. The view was also expressed that due to the high safety factors for FRP tanks there would be sufficient thickness to resist external impacts. It was also said by experts that they were confident that FRP tanks were sufficiently strong and expected them to perform better than metal tanks in particular aspects. Whilst the concerns expressed in the ITCO paper were shared by one of the delegations, the other delegations who took the floor supported the adoption of chapter 6.9 for FRP portable tanks from the UN Recommendations.

Item 8: INF.12 (Netherlands) – Filling degree of substances carried at and above 50 °C.

19. The opinion of the working group was requested on 4.3.2.2.3 concerning the filling degree for substances carried at and above 50 °C.

20. Experts that took the floor confirmed that 4.3.2.2.3 could be improved in line with the provisions of 4.2.1.9.5. It was also said that additional information may be required for the cases where the substances are heated above the filling temperature during the journey.

21. The Netherlands was invited to submit an official proposal for a future session.

Item 9: INF.13 (CEN) – Clarification of the requirements for the application of standards in Chapter 6.2 and 6.8.

22. It was brought to the attention of the Standards Working Group that some of the explanatory texts accompanying the tables in chapters 6.2 and 6.8 could be misinterpreted.

23. The experts that took the floor were of the opinion that the proposed amendments to 6.2.4.1 and 6.2.4.2 would also be helpful for the equivalent text in 6.8. An official document would be welcomed at the next session.

Item 10: INF 15 (United Kingdom) – Clarification of the thickness required by partitions and surge-plates in RID/ADR 6.8.2.1.20.

24. It was queried whether partitions and surge-plates in a tank would have to comply with the minimum shell thicknesses if either of the protection measures of 6.8.2.1.20 (b) 1. are applied. The experts that took the floor were in agreement that this was only applicable in the case these partitions or surge plates were used as strengthening elements. Although this was covered by the first paragraph of 6.8.2.1.20 (b) 1. it was agreed that this may be misinterpreted.

25. The following suggestions for improvement were made by the working group:

Option 1; introduce a note after the last paragraph of 6.8.2.1.20 (b) 1. to read:

Note: partitions and surge-plates that are not used as strengthening elements need not comply with these thickness requirements.

Option 2; amend the last paragraph of 6.8.2.1.20 (b) 1. to read (new wording underlined):

The thickness of the partitions and surge-plates that are used as strengthening elements shall in no case be less than that of the shell.

It was also found that in the English version of the first paragraph of 6.8.2.120 (b) 1. the use of the word “*strengthening members*” was not consistent and should be amended to read “*strengthening elements*”.

26. It was decided that these options would require careful consideration and the working group decided to revisit the subject at the next session.

Item 11: INF.31 (United Kingdom) – Inspection of tanks which have missed the timeframe for their scheduled inspections.

27. The question raised is how to deal with tanks that have missed the inspection that was due to be performed. In 6.7 for portable tanks it is regulated that if the tank has missed an intermediate inspection then a periodic inspection should be performed. A similar procedure is suggested in INF.31 for RID/ADR tanks in the sense that if an intermediate inspection has been missed then an exceptional inspection should be performed that would fulfil the requirements of a periodic inspection.

28. Several experts expressed that no problems were experienced with tanks being overdue for an inspection. If an intermediate inspection had been missed, a new intermediate inspection would be performed limited in time by the date for the next periodic inspection. Whenever a new periodic inspection is performed the timeline for the periodic inspections is reset.

29. It was mentioned that currently RID/ADR does not contain any indication of how to react if an inspection has been missed and that clarification is needed. The representative of UIP offered to provide a proposal for the next session.

Item 12: INF.35 (France) – Pump/exhauster unit for vacuum-operated waste tanks.

30. In the case of a vacuum-operated waste tank semi-trailer the pump/exhauster unit may have been placed on the drawing vehicle. The opinion was asked of the experts of the tanks working group how the suitability and inspection of this unit for the tank was controlled.

31. As this was a rather late document most experts said that they had not opportunity to take a position. However some remarks were made that in general these tractors and semi-trailers belonged to each other and were linked by referencing the other part under item 11 of the ADR certificate of the

vehicle. It was concluded that in order to clarify the situation an amendment to 9.7 of ADR may be helpful.
