Organisation intergouvernementale pour les transports internationaux ferroviaires
Zwischenstaatliche Organisation für den internationalen Eisenbahnverkehr
Intergovernmental Organisation for International Carriage by Rail

OTIF/RID/CE/GTT/2018-A

19 February 2018

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**TO THE GOVERNMENTS OF THE MEMBER STATES OF OTIF AND
TO REGIONAL ORGANISATIONS WHICH HAVE ACCEDED TO COTIF**

Final report of the 15th session of the RID Committee of Experts' working group on tank and vehicle technology

(Hamburg, 30 and 31 January 2018)

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1. At the invitation of GATX, the 15th session of the RID Committee of Experts' working group on tank and vehicle technology was held on 30 and 31 January 2018 in Hamburg.

2. The following RID Contracting States took part in the work of the 15th session of the working group on tank and vehicle technology (see also Annex I):

   Belgium, Czech Republic, Finland, France, Germany, Netherlands, Poland, Romania, Switzerland, Turkey and the United Kingdom.

   The European Union Agency for Railways was also represented (ERA).

   The following non-governmental international organisations were represented: The European Chemical Industry Council (CEFIC), the International Union of Railways (UIC), the International Union of Wagon Keepers (UIP) and the International Union of Combined Road-Rail Transport Companies (UIRR).

3. As decided at the 44th session of the RID Committee of Experts (see report OTIF/RID/CE/2007-A, paragraph 108), Mr Rainer Kogelheide (Germany) chaired the meeting and Mr Arne Bale (United Kingdom) was the deputy chairman.

ITEM 1: Approval of the agenda

Document: RID-17016-CE (Secretariat)

4. The provisional agenda contained in calling notice RID-17016-CE dated 19 December 2017 was adopted.

ITEM 2: Information from the chemical company BASF on the extra-large containers it uses

Informal document: INF.23 from the 8th session of the standing working group (CEFIC)

5. Based on the presentation in informal document INF.23 from the 8th session of the standing working group, the representative of CEFIC informed the meeting about the extra-large tank-containers used by BASF (see also OTIF/RID/CE/GTP/2017-A, paragraphs 82 to 84). He emphasised that the efficiency gains were mainly achieved at the plant premises by delivering the tank-containers on automated guided vehicles.

ITEM 3: Responses to questions on the newly deployed extra-large tank-containers

Informal document: INF.18 from the 8th session of the standing working group (Switzerland)

6. The representative of Switzerland introduced his informal document INF.18, which had been submitted to the standing working group (see also OTIF/RID/CE/GTP/2017-A, paragraphs 80 and 81) and thanked the Secretariat for translating the document into German and French.

ITEM 4: Comparison of the provisions currently applicable to tank-containers and tank-wagons

Documents: OTIF/RID/CE/GTT/2018/1 (Germany)
OTIF/RID/CE/GTT/2018/2 (United Kingdom)

Informal document: INF.21 from the 8th session of the standing working group (Belgium)

7. The representatives of Germany and the United Kingdom presented the differences between the provisions for tank-wagons and tank-containers in chapters 4.3 and 6.8, as set out in documents 2018/1 and 2018/2.

Acceleration tests

8. For tank-wagons and carrying wagons, standard EN 12663-2:2010 prescribes acceleration values of 5g in the direction of travel, whereas for tank-containers with a maximum permissible mass of 36 tonnes, UIC leaflet 592 prescribes 2g[1].

9. The representative of van Hool confirmed that the extra-large tank-containers had been tested at an acceleration value of 3g. During the dynamic longitudinal impact tests higher acceleration values were achieved (see annex of informal document INF.21) to compensate for the reduced maximum gross weight of the tank-container during the tests.

10. The representative of UIP explained that the carrying wagons used for extra-large tank-containers were fitted with fixing pins made of high-strength materials which, at an impact speed of 12 km/h and maximum permissible load, achieved a maximum acceleration value of 2.7g. The carrying wagons were approved in accordance with the TSI Wagon.

11. The representative of CEFIC added that the carrying wagons were equipped with long-stroke buffers. BASF used new carrying wagons to carry the extra-large tank-containers, although in principle, existing carrying wagons could also be used, provided they were also fitted with strengthened fixing pins.

12. The working group agreed that special markings should be provided for carrying wagons. These markings should indicate whether the wagons are fitted with strengthened fixing pins. This would have to be taken into account in the relevant EN standards, UIC leaflets and TSIs. An addition to the classification code could simplify the planning arrangements for such wagons. The wagon marking should also indicate whether it is suitable for hump shunting when laden or only when unladen.

Reducing the wall thickness

13. The formula for calculating the wall thickness was the same for both tank-wagons and tank-containers. However, one difference was that when using another metal with better properties for the tanks of tank-wagons, the minimum wall thickness of 6 mm for mild steel may be reduced to 4.5 mm, but for the tanks of tank-containers, it may be reduced to 3 mm (see 6.8.2.1.18).

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[1] TSI WAG refers to standard EN 12663-2:2010. According to this standard, the acceleration of 5g in the direction of travel only applies to the connection between the wagon body and the bogie and to the equipment fixings. As the shell is part of the wagon body, the proof load case of 5g does not apply to the shell.

For container carrying wagons, the fixing pins are to be considered as items of equipment to which the proof load case of 5g in the direction of travel applies in terms of their attachment to the wagon body. However, for the interface between the fixing pins and the container placed onto them, a proof load case of 2g in the direction of travel applies. In addition, under certain conditions (prohibition of pushing off and hump-shunting), for carrying wagons the speed in a jolting impact can be reduced to 7 km/h when loaded (still 12 km/h when unloaded).

14. Several delegations raised the question of whether this difference was still justifiable in view of the almost equal capacities of a bogie tank-wagon and an extra-large tank-container.

15. The representative of CEFIC replied that in relation to the quantities carried, there was no difference to two conventional tank-containers carried on one carrying wagon. He warned that if the wall thickness of tank-containers were increased, this would be detrimental to intermodal traffic and might lead to a massive modal shift to road transport.

16. The representative of CEFIC also pointed out that specifying minimum wall thicknesses when using better quality steels could curb technical developments, which also contribute to improving safety. He explained that using high quality steels when applying the third root formula in 6.8.2.1.18 would also allow wall thicknesses of less than 3 mm in order to achieve equivalence with 6 mm mild steel. Conversely, the wall thickness of 3.4 mm high quality steel used for the BASF tank-containers would be equivalent to a calculated wall thickness of 7.1 mm mild steel.

17. On the other hand, it was pointed out that there was a political dimension to the question of reducing the wall thickness. If smaller wall thicknesses were accepted for extra-large tank-containers, this could lead to tank-wagon operators also wanting a further reduction in the wall thickness. The risk assessment carried out in various European countries had already led to dangerous goods being prohibited from carriage on certain lines. Political discussions on the acceptability of dangerous goods transport operations could flare up again if the wall thickness were reduced.

18. The representative of CEFIC confirmed that the further wall thickness reduction for tank-containers in accordance with 6.8.2.1.19 and 6.8.2.1.20 had not been considered for the BASF tank-containers. The representative of van Hool was asked to submit approval documentation with regard to the calculation of the wall thickness and the materials used.

19. The working group decided to refer to the Joint Meeting's tank working group the question of whether the provisions relating to the possibility of reducing the wall thickness for extra-large tank-containers should be restricted. The tank working group would also be asked to examine whether the steels allowed in standard EN 14025 by a reference to standard EN 13445 should be extended to include other high quality steels. Lastly, the tank working group would be asked to deal with the question of whether it was still justifiable to specify a minimum wall thickness which may not be undercut in any circumstances (see paragraph 16).

Minimum distance between the headstock plane and the shell

20. For tank-wagons, 6.8.2.1.29 specifies that the minimum distance between the headstock plane and the most protruding point at the shell extremity must be 300 mm. There is no equivalent provision for carrying wagons for tank-containers. In contrast, the provision of 4.3.2.3.2 applies, according to which, during carriage, tank-containers must be loaded on the wagon in such a way as to be adequately protected by the fittings of the wagon or of the tank-container itself against lateral and longitudinal impact and against overturning. In the case of the carrying wagons built for the extra-large tank-containers, it should be remembered that they were fitted with long stroke buffers, which compensated for part of the required minimum distance.

21. It was pointed out that the discharge devices on all tank-containers are fitted to the ends. In the event of the buffers overriding, they are therefore directly in the danger zone.

22. It was not clear to what extent the measures provided for in 4.3.2.3.2 had been taken into account for the extra-large tank-containers and whether all the existing tank-containers complied with this provision. The representative of CEFIC was of the view that this was not a construction requirement, but an obligation on the part of the operator in order to prevent, for example, the tank-container's being positioned on the wagon in such a way that it protruded over the load surface of the carrying wagon into the buffer area.

Fixings for welded elements

23. According to 6.8.2.2.1, the fixings for equipment which is welded on must be made in such a way that the shell is prevented from being ruptured as a result of stresses caused by an accident. There is no equivalent provision for tank-containers.

24. The representatives of CEFIC and van Hool confirmed that equipment fixed to the tank wall was avoided. The fittings themselves were recessed into the tank. In addition, no fixed ladders were used, only mounting points.

External shut-off valves and self-operating ventilation valves

25. The working group saw no need to take action with regard to the differences concerning the external shut-off valves and the self-operating ventilation valves.

Pressure resistance of closures

26. For tank-wagons, 6.8.2.2.4 stipulates a specific pressure resistance for the closures of openings. It was recalled that this provision had been included in order to avoid leaks from the closures as the result of surge movements by the load.

27. The representative of van Hool confirmed that the extra-large tank-containers also complied with this provision.

28. The working group asked the Joint Meeting's tank working group to check whether the provisions for tank-wagons and tank-containers could be harmonised in this case, as standard EN 14025 also specifies corresponding pressure values for all tanks.

Inspection intervals

29. 6.8.2.4.2 and 6.8.2.4.3 specify different intervals for periodic inspections (8 years/5 years) and intermediate inspections (4 years/2½ years). This also applies to the substance-specific special provisions TT 3 to TT 6 and TT 10.

30. The representative of CEFIC pointed out the correlation between the inspection intervals and the smaller wall thickness prescribed for tank-containers. As a result of the shorter inspection intervals, any reduction of the wall thickness due to corrosion would be detected earlier than in tank-wagons.

Inscribing the date of the next inspection on the tank

31. According to 6.8.2.5.2, the date of the next periodic inspection and next intermediate inspection must be inscribed on tank-wagons. In addition, 6.8.2.5.2 required the information to be inscribed on both sides of tank-wagons, but only on one side of tank-containers.

32. The working group considered the information on the date of the next periodic inspection to be of use for tank-containers as well. It asked the Joint Meeting's tank working group to deal with this issue in conjunction with the United Kingdom's proposal ECE/TRANS/WP.15/AC.1/2018/8 concerning the model for tank plates. In so doing, it should also be checked whether the information under 6.8.2.5.2 should not appear on both sides, at least for extra-large tank-containers.

Use of wood

33. According to special provision TE 16, no wood may be used for tank-wagons for the carriage of oxidizing substances of packing group I.

34. The working group agreed that this difference need not be considered further, as no wood is used for tank-containers.

Energy absorption elements and protection against overriding

35. Special provisions TE 22 and TE 25 gave rise to a lengthy discussion. For tank-wagons for the carriage of certain dangerous liquids and gases, they prescribe the use of energy absorption elements and devices to protect against the overriding of buffers or to limit the damage caused by the overriding of buffers.

36. If these provisions were carried over for carrying wagons for extra-large tank-containers, this would mean that carrying wagons in container transport could no longer be deployed flexibly for all transport operations, thus making planning more difficult. If, on the other hand, the flexible use of carrying wagons was also to be ensured in future, stricter requirements would have to be made for the tank-containers in order to achieve an equivalent level of safety.

37. It was also pointed out that there were technical difficulties concerning crash-buffers. The activation value of these buffers was approximately equivalent to a collision test at an acceleration of more than 6 g. At such an acceleration, it was not certain that tank-containers would remain on the carrying wagons, as the fixing pins for all tank-containers were only designed for 3g.

38. The representative of CEFIC did not dispute the need for these substance-specific technical requirements for the vehicle, but pointed out that they would also have to be prescribed for carrying wagons for conventional 20' or 26' tank-containers, as the quantity of dangerous goods being carried per carrying wagon was comparable.

39. The working group agreed that for carrying wagons for extra-large tank-containers, measures that were at least equivalent would have to be implemented. The new Joint Coordinating Group of Experts in the carriage of dangerous goods and railway technology, whose task would be to reformulate as protective aims the technical vehicle requirements currently contained in RID, should take into account the problems for carrying wagons in its work. The working group assumed that the European Commission and the Secretariat of OTIF would organise the first session of the coordinating group and place these topics on the agenda.

40. It was pointed out that this Coordinating Group would have the task of ascertaining whether it would be better to implement measures to achieve the defined protective aim on the tank or on the vehicle, in order also to ensure that rail transport is not placed at a disadvantage. As tank-containers are, in principle, multimodal transport units, additional requirements for tank-containers are limited. This meant that measures that were ruled out because of the multimodal deployment of tank-containers would have to be taken into account in the requirements for carrying wagons.

General tank-container requirements

41. 7.1.3 makes the general statement that tank-containers used for the carriage of dangerous goods must satisfy the provisions of the CSC (International Convention for Safe Containers) or UIC leaflets 591, 592 and 592-2 to 592-4.

42. Participants said they would like a cross-reference to this provision in a Note in 6.8.2.1.2. This point would be submitted to the Joint Meeting's tank working group.

Energy absorption capacity of buffers for gas tank-wagons

43. For the buffers of gas tank-wagons, RID prescribes a higher dynamic energy absorption capacity (see 6.8.3.1.6).

44. As the representative of CEFIC explained that there were currently no plans to carry gases in extra-large tank-containers, the working group did not deal with this requirement.

Affixing placards

45. The representative of CEFIC pointed to a difference in the affixing of placards. For tank-wagons, the placards only have to be affixed to the sides (see 5.3.1.4), whereas for tank-containers, they have to be affixed to both sides and the ends (see 5.3.1.2). He was asked to submit an appropriate proposal if he wished to achieve a relaxation for extra-large tank-containers used exclusively in rail transport.

ITEM 5 Analysis of the risks resulting from the increased use of extra-large tank-containers

46. In view of the fact that the use of extra-large tank-containers imposes particular requirements on the carrying wagons, the representative of ERA pointed out that this could be considered as a significant change within the meaning of the Common Safety Method on Risk Evaluation and Assessment (CSM). Based on the CSM, it could be ascertained whether this was a significant change.

47. The representative of CEFIC emphasised that the extra-large tank-containers and carrying wagons had valid approvals and had been used successfully for more than two years. BASF said it was prepared to share the operational experience it had already gained and which was increasing as a result of the many ongoing transport operations, and hence to produce a voluntary risk analysis in the framework of the CSM. In the process, the extra-large tank-containers would be compared with intermodal transport and conventional tank-wagon transport. In addition, information could be obtained using the finite element method. If it proved necessary, BASF could also consider trials in the analysis, if need be.

48. The representative of CEFIC asked that the delegations send him as soon as possible any particular requests in relation to the risk analysis he had offered to carry out. He asked delegates to understand that he could not guarantee at present that the risk analysis would be submitted in time for the 9th session of the standing working group. He offered to host the working group on tank and vehicle technology at a possible future meeting in Ludwigshafen and to present the system that had been developed in practice and to show delegates the combi-terminal in Ludwigshafen, one of the largest intermodal terminals.

49. The representative of ERA recommended that when the risk analysis was being prepared, the work of the ERA workshop on guidelines for risk analyses should be taken into account (see also OTIF/RID/CE/GTP/2017-A, paragraph 89).

50. The working group underlined the importance of this risk analysis for the further work and to avoid local transport prohibitions (see also paragraph 17).

ITEM 6 Drafting of questions relating to the construction of tanks of extra-large tank-containers that can be submitted to the RID/ADR/ADN Joint Meeting's tank working group (Berne, 12 to 16 March 2018)

51. Questions the working group wishes the Joint Meeting's tank working group to deal with are set out in paragraphs 13 to 19, 26 to 28, 31, 32, 41 and 42. The secretariat was asked to submit the final version of the report to the tank working group.

ITEM 7: Any other business

52. As no topics were proposed for this agenda item, the chairman closed the meeting.

53. The representative of Belgium and the representative of the United Kingdom thanked the chairman for his excellent organisation of this meeting and very good conduct of the discussions.

Annex I

Liste des participants
Teilnehmerliste
List of participants

I. États parties au RID/RID-Vertragsstaaten/RID Contracting States

Allemagne/Deutschland/Germany

Mr Alfons **Hoffmann**
Mr Benjamin **Körner**
Mr Frank **Jochems**

Belgique/Belgien/Belgium

Ms Caroline **Bailleux**
Mr Luc **Opsomer**

Finlande/Finnland/Finland

Mr Jouni **Karhunen**

France/Frankreich/France

Mr Claude **Pfauvadel**
Ms Ariane **Roumier**
Mr Robert **Stawinski**
Mr Eugen **Brinda**

Pays-Bas/Niederlande/Netherlands

Mr Arjan **Walsweer**

Pologne/Polen/Poland

Mr Łukasz **Balcerak**
Mr Henryk **Ognik**

République tchèque/TschechischeRepublik/CzechRepublic

Mr Vladimír **Hájek**
Mr Stanislav **Hájek**

Roumanie/Rumänien/Romania

Mr Lucian **Blaga**
Ms Valerica **Stan**

Royaume-Uni/Vereinigtes Königreich/United Kingdom

Mr Arne **Bale**

Suisse/Schweiz/Switzerland

Mr Colin **Bonnet**
Mr Claude **Despont**

Turquie/Türkei/Turkey

Mr Mehmet Bülent **Özçelik**
Mr Zumer Köksal **Altintas**

II. États non parties au RID/Nicht-RID-Vertragsstaaten/Non-RID Contracting States

III. Organisations internationales gouvernementales/ Internationale Regierungsorganisationen/International governmental organisations

Agence de l'Union européenne pour les chemins de fer/Eisenbahnagentur der Europäischen Union/European Union Agency for Railways (ERA)

Mr Emmanuel **Ruffin**

IV. Organisations internationales non gouvernementales Internationale Nichtregierungsorganisationen International non-governmental organisations

CEFIC

Mr Thorsten **Bieker**

UIC

Mr Jean-Georges **Heintz**
Mr Holger **Hirsch**

UIP

Mr Rainer **Kogelheide**
Ms Irmhild **Saabel**
Mr Philippe **Laluc**
Mr Ernst **Winkler**
Mr Oliver **Behrens**

UIRR

Mr Leonardo **Fogu**

V. Invité/Gäste/Guests

Bureau Veritas

Mr Bart **Van Looveren**

van Hool

Mr Luc **Borstlap**

Waggonbau Graaff

Mr Nico **Helbig**
Mr Markus **Ritzka**

VI. Secrétariat/Sekretariat/Secretariat

Mr Jochen **Conrad**
Ms Katarina **Guricová**

VII. Interprètes/Dolmetscher/Interpreters

Mr David **Ashman**