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

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Report of the Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods on its Autumn 2011 session

held in Geneva from 19–23 September 2011

Report of the Working Group on Tanks

1. The Working Group on Tanks met from 19 to 21 September 2011 in Geneva on the basis of an appropriate mandate from the RID/ADR/ADN Joint Meeting. The treated documents were submitted to the plenary session and remitted to the Working Group for analysis.

- 2. The Working Group on Tanks dealt with the following official and informal documents:
- ECE/TRANS/WP.15/AC.1/2011/30 add.1 (Secretariat)
- ECE/TRANS/WP.15/AC.1/2011/31 (EFCD)
- ECE/TRANS/WP.15/AC.1/2011/32 (France)
- ECE/TRANS/WP.15/AC.1/2011/38 (UIP) + INF.42 (Germany)
- ECE/TRANS/WP.15/AC.1/2011/39 (Germany) + INF.6 (Switzerland)
- ECE/TRANS/WP.15/AC.1/2011/42 (Netherlands)
- ECE/TRANS/WP.15/AC.1/2011/43 (Netherlands)
- ECE/TRANS/WP.15/AC.1/2011/44 (Sweden) + INF.21 (Sweden)
- ECE/TRANS/WP.15/AC.1/2011/45 (CEFIC)
- ECE/TRANS/WP.15/AC.1/2011/50 (France) + INF.35 (France)
- ECE/TRANS/WP.15/AC.1/2011/51 (France) + INF.49 (Switzerland)
- Informal document INF.4 (Belgium)
- Informal document INF.47 (France)

3. The Working Group on Tanks was comprised of 26 experts from 10 Member States and from 2 non-governmental organizations (NGOs).

4. The documents were dealt with in a sequence depending on requirements, time constraints and the presence of experts.

Item 1. ECE/TRANS/WP.15/AC.1/2011/30 add.1 (Secretariat) Report of the Ad Hoc working group on the Harmonization of the RID/ADR/ADN with the UN Recommendations on the Transport of Dangerous Goods

5. The Working Group confirmed the proposed new tank code SGAN to be added in column (12) of Table A in Chapter 3.2 for UN 1792 IODINE MONOCHLORIDE, SOLID and the retention of the original tank code L4BN for UN 3498, IODINE MONOCHLORIDE, LIQUID.

6. For UN 2381 DIMETHYL DISULPHIDE the Working Group confirmed the proposed new tank code L4BH which replaces the current LGBF as a consequence of the assigned subsidiary hazard class 6.1. The addition of TU15 to column (13) of Table A was also confirmed for this entry. To allow industry to adapt to this change in tank code, the following transitional measures were proposed:

7. RID/ADR: Add a new 1.6.3.x:

For UN 2381, the tank code specified in column (12) of Table A of Chapter 3.2 applicable up to 31 December 2012 may continue to be applied until 31 December 2018 for tank-wagons/fixed tanks (tank-vehicles) and demountable tanks constructed before 1 July 2013.

RID/ADR: Add a new 1.6.4.y:

For UN 2381, the tank code specified in column (12) of Table A of Chapter 3.2 applicable up to 31 December 2012 may continue to be applied until 31 December 2018 for tank-containers constructed before 1 July 2013.

8. For UN Nos. 3500 to 3505 (chemicals under pressure), the Working Group noted that the European industry did not foresee a need for the carriage of chemicals under pressure in RID/ADR tanks but was nevertheless of the opinion that a proposal for appropriate tank codes in the next biennium is desirable to meet the possible future needs of industry.

Item 2: ECE/TRANS/WP.15/AC.1/2011/31 (EFCD) Report on the informal working group on additive devices on tanks

9. The working group discussed at length the report of the Berlin Working Group held on 18 May 2011 and the proposed text. There was a principal agreement to have a special provision in chapter 3.3. The proposed additives and liquid fuels against which the additives can be added were also agreed upon, as well as a transitional measure allowing the transport of the existing additive devices for a period of 6 years from the date of entry into force of the new requirements.

10. The Working Group felt that the existing text was not mature enough for adoption and further work to improve the text was necessary.

A drafting group worked to improve the text to an acceptable level. In this approach the principle to add the special provision against the additives instead of the fuels was agreed upon. Additionally, the Working Group agreed upon the following technical requirements:

- only metal receptacles are allowed for additive devices
- compartments of tanks need not be included in the special provision
- a maximum of 4 receptacles with an individual capacity of 120 litres is allowed
- marking of the receptacle is required
- an indication must be included in the transport document

11. Given the complexity of the problem, the WG was not able to finalize an acceptable text taking all problems into account but was able to provide detailed guidance to ECFD on how to improve their proposal for the future, including an option to deal with additive devices through a derogation.

Item 3: ECE/TRANS/WP.15/AC.1/2011/32 (France) Frequency of periodic inspections for the transport of certain gases

12. After a brief discussion, the Working Group agreed to adopt the new TT10 as proposed in 2011/32 and to add TT10 in column (13) of Table A of Chapter 3.2 for UN Nos. 1008, 1017, 1048, 1050, 1053 and 1079. Consequentially, in 6.8.3.4.6 the letter (a) and the following text and the letter (b) need to be deleted.

13. It was also agreed to refrain from doing a similar modification for the current letter (b) of 6.8.3.4.6 dealing with refrigerated liquefied gases as it doesn't refer to specific UN Nos.

14. Finally, it was agreed to take the opportunity to delete the last sentence of 6.8.3.4.6 dealing with the leakproofness test after assembly since this is already covered in 6.8.2.4.1:

When the shell, its fittings, piping and items of equipment have been tested separately, the tank shall be subjected to a leakproofness test after assembly.

Item 4: ECE/TRANS/WP.15/AC.1/2011/38 (UIP) Rules on the modification and reconstruction of tanks whose design type approvals have expired or been withdrawn + Informal document INF.42 (Germany) Alternative wording for document 2011/38

15. The Working Group had an extensive discussion on the principles and consequences of the text proposed by Germany in INF.42, which was taken as basis for discussion. Ultimately it was agreed by the large majority of the working group to fully adopt the principle that any competent authority or designated body can issue an approval certificate for a modification to existing tanks, irrespective of which competent authority issued the original type approval.

16. The Working Group drafted alternative wording for a new 6.8.2.3.4 and 1.8.7.2.5 to read as follows:

6.8.2.3.4 In the case of a modification of a tank with a valid, expired or withdrawn type approval, the testing, inspection and certification are limited to the parts of the tank that have been modified. The modification shall meet the provisions of RID/ADR applicable at the time of the modification. For all parts of the tank not affected by the modification, the documentation of the initial type approval remains valid.

A modification may apply to one or more tanks covered by a type approval.

A certificate approving the modification shall be issued by a competent authority or by a body designated by this authority and shall be kept as part of the tank record.

17. The following consequential new paragraph in section 1.8.7 was proposed:

1.8.7.2.5 In the case of modification of a pressure receptacle, tank, battery wagon/vehicle or MEGC with a valid, expired or withdrawn type approval, the testing, inspection and certification are limited to the parts of the pressure receptacle, tank, battery vehicle or MEGC that have been modified. The modification shall meet the provisions of RID/ADR applicable at the time of the modification. For all parts of the pressure receptacle, tank, battery-wagons/ vehicle or MEGC not affected by the modification, the documentation of the initial type approval remains valid.

A modification may apply to one or more pressure receptacles, tanks, battery wagons/vehicles or MEGCs covered by a type approval.

A certificate approving the modification shall be issued to the applicant by a competent authority or by a body designated by this authority. For tanks, battery-wagons/vehicles or MEGCs, a copy shall be kept as part of the tank record.

Item 5: ECE/TRANS/WP.15/AC.1/2011/39 (Germany) + Informal document INF.6 (Switzerland) Application of standards EN 14432 and EN 14433 listed in 6.8.2.6

18. Germany presented the issue and referred to Multilateral Agreements M242 and RID 7/2011 which allows new tanks to be equipped with foot valves, product discharge and air inlet valves not conforming to EN 14432 and EN 14433 until 31/12/2011.

19. A large minority of the Working Group expressed principle and legal objections against the retroactive legalization of tanks not conforming to standards which were mandatory in 2011 and which had been referenced in the regulations since 2009.

20. No technical objection was made about the use of existing valves not conforming to the mentioned standards.

21. The Working Group repeated its desire for a revision by CEN of the mentioned standards, as stated in the report of the March 2011 session of the Working Group.

22. The final decision regarding the proposed transitional measure for the RID/ADR 2013 version given below is left to the discretion of the Joint Meeting:

1.6.3.x/1.6.4.x:

Tanks constructed before 1 January 2012 in accordance with the requirements in force up to 31 December 2010, but which do not however conform to the requirements of 6.8.2.6 relating to standards EN 14432:2006 and EN 14433:2006 applicable as from 1 January 2011, may still be used.

Item 6: ECE/TRANS/WP.15/AC.1/2011/42 (Netherlands) Marking of demountable tanks

23. In line with the invitation of the Working Group at the March 2011 session, the Netherlands presented text to bring the marking requirements of demountable tanks more in line with the requirements for marking of tank-containers.

24. After a short discussion on the appropriate wording, the Working Group adopted the proposal of the Netherlands with slight modifications. The final agreed text is given below:

ADR only, new text in italics (the changes in bold italics are applicable to RID as well).

The following particulars shall be inscribed on the tank-vehicle (on the tank itself or on plates) ¹² :	The following particulars shall be inscribed on the tank-container (on the tank itself or on plates) 12 :				
- name of owner or operator;	- names of owner and of operator;				
- unladen mass of the tank-vehicle; and	- capacity of the shell;				
- maximum permissible mass of the tank-	- tare of the tank-container;				
vehicle.	 maximum permissible laden gross mass of the tank-container; 				
The following particulars shall be inscribed on a demountable tank (on the tank itself or on a plate) ¹² :	for the substances according to 4.3.4.1.3, the proper shipping name of the				
- name of owner or operator;	substance(s) accepted for carriage;				
- "demountable tank";	- tank code according to 4.3.4.1.1;				
- tare of the tank;	- for substances other than those according				
- maximum permissible gross mass of the tank.	to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE which are				
 for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage; 	shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the tank.				
- tank code according to 4.3.4.1.1;					
- for substances other than those according to 4.3.4.1.3, the alphanumeric codes of all special provisions TC and TE which are shown in column (13) of Table A of Chapter 3.2 for the substances to be carried in the					

25. The amendment of markings for demountable tanks requires transitional measures for existing tanks. For this reason the Working Group also supported the second proposal of the Netherlands:

ADR only: insert "and demountable tanks" in the text adopted at the last session of the Joint Meeting, as follows:

1.6.3.41 Tank-vehicles and demountable tanks constructed before 1 July 2013 in accordance with the requirements in force up to 31 December 2012, but which do not, however, meet the marking provisions of 6.8.2.5.2 or 6.8.3.5.6 applicable as from 1 January 2013, may continue to be marked in accordance with the requirements applicable up to 31 December 2012 until the next periodic inspection after 1 July 2013.

26. Future attention should be given to provisions for marking on both sides of tank-containers as is done for tank-wagons.

Item 7: ECE/TRANS/WP.15/AC.1/2011/43 (Netherlands) Filling devices for vacuum-operated waste tanks

27. The Netherlands proposal to align the French and English version of ADR/RID for fillings/filling pipes was supported by the Working Group. The agreed upon terminology to be used in 4.5.2.2 was: "filling devices" – "dispositifs de remplissage" – "Fülleinrichtungen". Several other modifications to

tank.

¹² Add the units of measurement after the numerical values.

4.5.2.2 were made by the Working Group to further align the paragraph with existing text in other parts of the regulations:

4.5.2.2.1 For carriage of liquids *meeting the flash point criteria of class 3*, vacuumoperated waste tanks shall be filled through *filling devices* which discharge into the tank at a low level. *Measures shall be taken* to minimize the production of spray.

28. The Working Group decided not to adopt the proposed new 6.10.3.10 and to leave it open how to meet the requirements of 4.5.2.2 (through the tank construction or other means such as top loading with a long filling arm,...).

Item 8: ECE/TRANS/WP.15/AC.1/2011/44 (Sweden) + Informal document INF.21 (Sweden) Chapter 6.8 - Differentiation of austenitic-ferritic stainless steel grades

29. Sweden presented their documents with the objective of allowing the same wall thickness as austenitic stainless steel for austenitic-ferritic stainless steels under certain conditions.

During the discussion, questions were raised about the low proposed impact toughness of 40 J, the energy absorption, the behavior and the ferrite content of the welds and the -40°C temperature limit.

30. The absence of a 30% elongation at rupture limit in material standard EN 10028-7 and the fact that austenitic-ferritic stainless steels are currently not incorporated in the EN 14025 section allowing a reduction in wall thickness were discussed.

31. Ultimately the working group confirmed that the compromise with a higher wall thickness adopted in the March 2011 session of the Working Group was the preferable situation at the moment, especially in the absence of adapted standards.

32. Sweden withdrew their proposal for the time being pending future developments of EN 10028 and EN 14025.

Item 9: ECE/TRANS/WP.15/AC.1/2011/45 (CEFIC) Transport in tanks of UN 0331 (Explosive, Blasting, Type B) (Withdrawn by CEFIC, proposed by Germany and Switzerland)

33. Germany introduced the document and expressed the wish to transport UN 0331 in chapter 6.8 tanks, where they are currently only allowed in T1 portable tanks according to chapter 6.7. There was no objection in principle from the Working Group against this wish. The scope of the document was however reduced by the Working Group to only ADR tank-vehicles.

34. The Working Group was also informed that road transport is currently already allowed in Germany for over 5 years by means of a national derogation under the proposed provisions.

35. The Working Group then proceeded with a detailed analysis of the proposed provisions:

[For UN 0331 in Table A of Chapter 3.2:

Insert in column 12: S2.65AN(+)

Insert in column 13: TU 3, TU 12, TU 39, TU XX, TC YY, TA1]

Comments by the Working Group: Some members of the Working Group proposed inclusion of TE 10, TU19 and especially an equivalent of TA3 prohibiting the use of tank codes higher in the tank code hierarchy.

[Add a new (a) to 4.3.4.1.3 with the following text (re-numbering existing paragraphs (b) to (i):

"(a) Class 1.5

UN 0331 Explosive, Blasting, Type B: code S2.65AN"]

Comments by the Working Group: The Working Group generally agreed with the proposed tank code. The test pressure level of 2,65 bar was considered a good compromise between the minimum wall thickness and impact resistance of the tank, while allowing the current use which requires a pressure of more then 1 bar during discharge. A dedicated tank seemed also for the Working Group the best option.

[In Section 4.3.5 add a new special provision TU XX as follows:

"TU XX: The maximum permissible net mass in 7.5.5.2.1 is not applicable if in addition to the verification of suitability in accordance with TU39, the suitability of the substance in cases "without mass limitation" has been determined by the competent authority."]

Comments by the Working Group: The Working Group was informed that in Germany a risk evaluation showed that the effect of an incident with 16 tons of any explosives was comparable to the effect of an incident with 25 tons of UN 0331 for aluminium alloy tanks. In this philosophy the allowed net mass of product transported under the German derogation is higher then 16 tons since this reduces the number of transports on the road. Some members of the Working Group expressed their surprise at this information since it is a definite break from the currently used philosophy in the ADR regulations and the EU Directive 2008/68. Since this would only be applicable to ADR tank-vehicles the view of the WP.15 was deemed necessary.

[In Section 6.8.4 b) add a new a special provision TC YY as follows:

"TC YY: The shells shall be made of aluminium or aluminium alloy."]

Comments by the Working Group: The Working Group agreed that aluminium alloy (minimum 5 mm wall thickness) was the only suitable material for construction of the shell for this specific substance. The use of aluminium would lead to wall thicknesses of 8 mm. The use of steel would lead to safety issues in the event of a fire, leading to much higher temperatures and pressures than would be the case for aluminium alloys and for 25 tons of this substance. For other substances under this UN entry, steel could be used with a mass limitation of 16 tons, in line with T1.

36. Further required consequential amendments to be added to the proposal are:

Amend the heading of 4.3.4 to read: "Special provisions applicable to Classes 1 and 3 to 9" Amend the last sentence of 4.3.2.1.2 to read: "The explanations for reading the four parts of the code are given in 4.3.3.1.1 (when the substance to be carried belongs to Class 2) and in 4.3.4.1.1 (when the substance to be carried belongs to Classes 1 and 3 to 9)."

Amend footnote 1 to read: 1 An exception is made for tanks intended for the carriage of substances of classes 1, 5.2 or 7 (see 4.3.4.1.3).

37. Several experts also expressed that they are not in a position to take a final decision on the proposal since they need both the referenced test data from BAM and time to evaluate the provided data with national explosives experts.

38. Ultimately the Working Group conceded that no final decision can be taken at this time but that the issue could be discussed at the next WP.15.

Item 10: ECE/TRANS/WP.15/AC.1/2011/50 (France) + Informal document INF.35 (France) Work on standardization for venting devices and flame traps/flame arresters; Clarification of 6.8.2.2.6

39. The Working Group supports CEN TC 296/WG7 in its development of a standard for flame arresters for "breather devices" for future reference in ADR and felt that WG7 was the best suited group to develop these technical requirements. The Working Group expressed the wish to include the requirements for vacuum valves for chemical tankers in this effort but felt it was not necessary to include safety valves. A separate standard for chemical tankers would be desirable since it has a joint ADR/RID use.

40. The Working Group also confirmed that until there is a standard referenced in ADR/RID, the regulations currently provide no specific criteria for flame arresters/flame traps.

41. The working group supported the use of the terminology "breather device" instead of venting systems as this term is used in EN 14564 which serves as a reference standard for terminology.

42. Elimination of the term flame trap can however pose problems as it is terminology that is commonly used. A definition for flame arrester in ADR/RID would be desirable in this case.

43. The proposed text in INF.35 was modified by the Working Group and given below. The Working Group also decided to invite France to come back with an official proposal pending development of the standard.

	4	Safety valves/device s	V =	tank with a venting system, breather device according to 6.8.2.2.6, but no flame trap device protecting against the propagation of a flame; or non-explosion-pressure proof tank;
			F =	tank with a venting system, breather device according to 6.8.2.2.6, fitted with a flame trap device protecting against the propagation of a flame; or explosion-pressure proof tank;
			N =	tank without a venting system breather device according to 6.8.2.2.6 and not hermetically closed;
			H =	hermetically closed tank (see 1.2.1).
French	1	Γ	1	
	4	Soupapes/ dispositifs de sécurité	V =	citerne avec dispositif d'aération, de respiration selon 6.8.2.2.6, sans dispositif de protection contre la propagation de la flamme ; ou citerne non résistante à la pression générée par une explo- sion ;
			F =	citerne avec dispositif d'aération, de respiration selon 6.8.2.2.6, muni d'un dispositif de protection contre la propa- gation de la flamme ; ou citerne résistante à la pression générée par une explosion
			N =	citerne sans dispositif d'aération de respiration selon le 6.8.2.2.6 et non fermée hermétiquement ;
			H =	citerne fermée hermétiquement (voir 1.2.1).

4.3.4.1.1 English

Г

6.8.2.2.3 (third and fourth paragraphs)

Е

Vacuum valves

(RID and self-operating ventilation valves)

and venting systems breather devices (see 6.8.2.2.6) used on tanks intended for the carriage of substances meeting the flash-point criteria of Class 3, shall prevent the immediate passage of flame into the shell by means of a suitable protective device, or the shell of the tank shall be capable of withstanding, without leakage, an explosion resulting from the passage of the flame.

If the protection **device** consists of a suitable **flame trap or flame arrester**, it shall be positioned as close as possible to the shell or the shell compartment. For multi-compartment tanks, each compartment shall be protected separately.

F

Les soupapes de dépression (RID et dispositifs de mise à l'atmosphères

commandés par contrainte)

et les dispositifs d'aérationde respiration (voir 6.8.2.2.6) utilisés sur des citernes destinées au transport de matières qui, par leur point d'éclair, répondent aux critères de la classe 3, doivent empêcher le passage immédiat d'une flamme dans le réservoir au moyen d'un dispositif de protection approprié, ou bien le réservoir de la citerne doit être capable de supporter, sans fuir, une explosion résultant du passage d'une flamme.

Si **le dispositif de** la protection consiste en un arrête-flamme ou pare-flamme approprié, celui-ci doit être placé aussi près que possible de la citerne **du réservoir** ou du compartiment de la citerne **du réservoir**. Dans le cas de citerne **à multi-**compartiments, chaque compartiment doit être protégé séparément.

6.8.2.2.6

E

Tanks intended for the carriage of liquids having a vapour pressure of not more than 110 kPa (1.1 bar) (absolute) at 50 $^{\circ}$ C shall have a venting system **breather device** and a safety device to prevent the contents from spilling out if the tank overturns; otherwise they shall conform to 6.8.2.2.7 or 6.8.2.2.8.

F

Les citernes destinées au transport de matières liquides dont la pression de vapeur à 50 °C ne dépasse pas 110 kPa (1,1 bar) (pression absolue) doivent être pourvues d'un dispositif d'aérationde respiration et d'un dispositif propre à empêcher que le contenu ne se répande audehors si la citerne se renverse ; sinon elles devront être conformes aux conditions des 6.8.2.2.7 ou 6.8.2.2.8.

Replace "venting system" by "breather device" in 4.3.2.2.1 (a) and (b), 6.8.2.4.3 last but one paragraph and (ADR 6.12.4.4).

Item 11: ECE/TRANS/WP.15/AC.1/2011/51 (France) Additional measures after discharge of liquefied gas tanks during cold spells + Informal document INF.49 (Switzerland) Comments on document 2011/51 concerning additional measures after emptying tanks of liquefied gas at very low temperatures

44. In follow-up of the accident report put forward at the March 2011 session of the Working Group, France proposed provisions in a new 4.3.3.3.4 to protect tanks against vacuum pressure.

45. The Working Group modified the original proposal by specifying that measures are only required for carriage of low pressure liquefied gases and by using a more general phrasing to describe the occurrence of vacuum pressure. The following text was agreed upon by the experts of the Working Group:

4.3.3.3.4 When the external overpressure could be greater than the tank resistance to external pressure (e.g. due to low ambient temperatures), adequate measures shall be taken to protect tanks carrying low pressure liquefied gases against the risk of deformation, e.g. by filling them with nitrogen or another inert gas in order to maintain sufficient pressure inside the tank.

Item 12: Informal document INF.4 (Belgium) TE 19 – applicability for vacuum-operated waste tanks

46. Belgium introduced the interpretation question regarding the applicability of TE19 and more general protection against overturning to vacuum operated waste tanks. A detailed discussion in the Working Group followed incorporating the views of WG3 of CEN TC 296 and the AFNOR secretariat.

47. The ultimate outcome of the discussion was that for the specific case of protection against damage from overturning, which is not included in either EN 14025 paragraph 5.4 or in ADR 6.10.3.1, the majority of experts expressed that the actual regulations are such that they require the applicable provisions of chapter 6.8 (6.8.2.1.28, TE19) also for vacuum operated waste tanks.

Item 13: Informal document INF.47 (France) Carriage of UN 1075 in tanks

48. France introduced the issue that UN 1075 can be used for LPG according to the definition of LPG which will be introduced in ADR/RID 2013 and according to the existing ADR/RID 2.2.2.3 note 2.

49. To be consistent and to complete the tank transport requirements for UN 1075, France proposed to add a line for UN 1075 in the Table of 4.3.3.2.5, as is already the case for UN 1965 (which is the most commonly used entry for LPG in European land transport).

50. After a short discussion, the Working Group unanimously decided to propose the following addition to the Table of 4.3.3.2.5:

UN No.	Name	Classifi- cation code	Minimum test pressure for tanks				Maximum permissible
			With thermal insulation		Without thermal insulation		mass of contents per litre of capacity
			MPa	bar	MPa	bar	Kg
1075	Petroleum gases, liquefied	2 F	See 4.3.3.2.2 or 4.3.3.2.3				

51. The Working Group invites AEGPL to provide further technical details to be included in the above mentioned table for the future.