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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Safety Committee and the  
Working Party on the Transport of Dangerous Goods

**REPORT OF THE SESSION**

**held in Geneva from 1 to 10 September 2003 and  
in Bonn from 13 to 17 October 2003**

**Addendum 8**

**Annex 2**

**Report of the working group on tanks**

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\* Circulated by the Central Office for International Carriage by Rail (OCTI) under the symbol OCTI/RID/GT-III/2003-B/Add.8.

The working group on tanks met in Bonn from 13 to 16 October 2003, concurrently with the RID/ADR/ADN Joint Meeting, in accordance with the mandate entrusted to it by the RID/ADR/ADN Joint Meeting on 13 October, under agenda item 7.

The working group considered the following official (TRANS/WP.15/AC.1-OCTI/RID/GT-III/-) and informal documents:

|          |          |         |                        |
|----------|----------|---------|------------------------|
| -2003/43 | -2003/66 | -INF.15 | -INF.37                |
| -2003/50 | -2003/67 | -INF.16 | -INF.44                |
| -2003/52 | -2003/68 | -INF.17 | -INF.45                |
| -2003/53 | -2003/72 | -INF.18 | -INF.46                |
| -2003/57 | -INF.7   | -INF.34 | -OCTI working document |
| -2003/65 | -INF.8   | -INF.36 |                        |

The working group was made up of 17 experts from 11 countries and 3 non-governmental organizations.

Since not all the experts were able to be present at every meeting, the working group discussed the documents chronologically according to which experts were present.

#### **1. OCTI working document**

The definition of “maximum working pressure” can be found in 1.2.1.

Different terms, however, are used for vacuum-operated waste tanks in subsections 6.10.3.6 and 6.10.3.8.

It is proposed that these terms should be brought into line with the definition in 1.2.1 of ADR. This was earlier done for RID when Chapter 6.10 was revised.

The working group approved this proposal and requests the Joint Meeting to approve it also.

#### **2. Document INF.37 (Finland) (Limited implementation of standard EN 14025)**

After a lengthy discussion in the working group, it was noted that the problem of the calculation for tanks according to this standard was the direct result of the incomplete definitions of maximum working pressure in RID/ADR. Since the regulations for pressure receptacles referred to working pressure in all their provisions, a problem arose for gases in Chapter 4.3 of RID/ADR, where the provisions concerning the working pressure referred to the test pressure.

The unanimous opinion of the working group was that the problem could be solved by amending the definition of maximum working pressure in section 1.2.1 of RID/ADR.

Proposal:

Add a new sentence to the last paragraph of the definition of maximum working pressure in section 1.2.1, to read:

“This requirement does not apply to tanks for the carriage of compressed, liquefied or dissolved gases of Class 2.”

This addition in any case removes any remaining problems in the implementation of standard EN 14025. For this reason the Joint Meeting is requested to approve the proposed amendment to RID/ADR.

**3. Document INF.7 (UIC) (Reference to standard EN 12972)**

The problem of the reference to this standard for testing had already been discussed in plenary. Following a discussion the working group proposed the following amendment to 6.8.2.7:

Amend 6.8.2.7 to read:

End of first sentence, read:

“... shall be designed, constructed and tested in accordance with the provisions of the technical code providing the same level of safety and recognized by the competent authority.”;

Add a new sentence to follow the second sentence:

“For testing, inspection and marking the applicable standard as referred to in 6.8.2.6 may also be used.”

The working group requests the Joint Meeting to approve this amendment.

**4. Document 2003/50 (Belgium) (Definition of hermetically closed tanks)**

This document proposes a new form of wording for the definition of hermetically closed tanks prepared in March by the working group and adopted by the Joint Meeting.

The working group recommends that the Joint Meeting should adopt the proposal with minor drafting changes.

Replace the definition of “hermetically closed tanks” by:

“**Hermetically closed tank**’ means a tank for the carriage of liquids with a calculation pressure of at least 4 bar, or for the carriage of solid (powdery or granular) substances of any calculation pressure, whose openings are hermetically closed and which:

- is not equipped with safety valves, bursting discs, other similar safety devices or vacuum valves [or with self-operating ventilation valves] (RID only), or

- is not equipped with safety valves, bursting discs or other similar safety devices, but is **equipped** with vacuum valves [or with self-operating ventilation valves] (RID only) as allowed by **the** special provision **TE 15** of 6.8.4, or
- is equipped with safety valves preceded by a bursting disc according to 6.8.2.2.10, but is not equipped with vacuum valves [or with self-operating ventilation valves] (RID only), or
- is equipped with safety valves preceded by a bursting disc according to 6.8.2.2.10, and with vacuum valves [or self-operating ventilation valves] (RID only) as allowed by **the** special provision **TE 15** of 6.8.4.”

**5. Document 2003/52 (Switzerland) (Corrections concerning the conditions of carriage for UN Nos. 1001, 1067 and 1076)**

The proposal concerning UN No. 1076 phosgene had already been discussed in a similar form and seemed acceptable. The extension of the original proposal to substances of UN No. 1001 acetylene, dissolved and UN No. 1067 dinitrogen tetroxide was then adopted overall by the working group without further discussion of detail.

Chapter 3.2, Table A: UN Nos. 1001, 1067 and 1076

Add “(M)” to column (12) after the tank code, since the carriage of phosgene, acetylene and dinitrogen tetroxide is permitted in battery-wagons/battery-vehicles or MEGCs.

(RID only): Chapter 3.2, Table A: UN Nos. 1076 and 1067, in column (13) delete special provision “TM 6” since this provision is not applicable.

Paragraph 4.3.3.1, Note 1

Add at the end of the sentence:

“the elements of which are composed of receptacles”.

The working group proposes the adoption of this proposal.

**6. Document 2003/53 (Switzerland) (6.8.3.4.13)**

This involves a drafting problem in 6.8.3.4.13 and the aim of the document is to correct the reference concerning periodic tests.

Proposal:

The reference to 6.2.1.5 (“Initial inspection and test”) should be replaced by a reference to 6.2.1.6 (“Periodic inspection and test”).

The working group recommends the adoption of the proposal.

**7. Document 2003/72 (OCTI) (Marking of MEGCs)**

The suggestion by OCTI that the marking of MEGCs in 6.8.3.5.11 of ADR should be brought into line with 6.8.3.5.11 of RID was approved and the working group recommends its adoption.

**8. Documents 2003/43 (Italy) and INF.45 (Belgium) (Amendments to 4.3.4.1)**

The proposal to amend 4.3.4.1 was discussed and the proposals contained in the documents were consolidated in a proposal to the Joint Meeting in the form of a unanimous decision:

Proposals:

- Delete the last column “Hierarchy of tanks” in 4.3.4.1.2.
- Transfer the text of the Note below the table to the end of this paragraph and replace the first word of the text “This” by “The”.
- After the table add the heading “Hierarchy of tanks”.
- Delete the first two sentences of the existing text after the table (under the new heading) beginning with “The list of tank codes ...”.

In 4.3.4.1.3 delete the third sentence beginning “The hierarchy ...” and the word “However” at the beginning of the fourth sentence.

The working group requests the approval of the Joint Meeting.

**9. Document 2003/65 (United Kingdom) (Tanks with recessed valve chest below the liquid level)**

After a new introduction of the document and a lengthy discussion, the working group did not approve the proposal. The reason was mainly of a formal nature since for some dangerous substances no opening (or cleaning aperture) is permitted below the liquid level.

The protection provided does not itself represent a major problem, in particular when flange-construction, valves and sealing materials are selected taking the substances to be carried and potential hazards into account.

The ideal location for the protection of the valve chest is indicated in the document (ninth paragraph) as “at the front, behind the cab unit”. This is not, however, possible for tank wagons and tank-containers.

It was recommended that the representative of the United Kingdom should submit a new proposal with a view to amending the requirement concerning the prohibition on openings below the liquid level.

**10. Documents 2003/66 (France), 2003/68 (UIP) and INF.44 (Belgium) (Marking of tank wagons and tank-containers)**

The opinion of the majority of the working group was that the marking of tanks with the tank code would permit the full allocation to the tanks of the substances to be carried only if at the same time the special provisions applicable were indicated. On the other hand, the marking as prescribed of the name of the substance would permit this situation for “substances (+)”.

On the basis of this principle, the working group discussed the documents and finalized the following proposals for the Joint Meeting:

Proposal:

6.8.2.5.2 of RIF

Amend the columns as follows:

Replace the indent before “tank code according to 4.3.4.1.1” by: “- for the substances according to 4.3.4.1.3, the proper shipping name of the substance(s) accepted for carriage in the tank.”

After “tank code according to 4.3.4.1.3”, add a new indent: “- for the other substances than those according to 4.3.4.1.3, all applicable special provisions TC, TE and TA according to 6.8.4.”

Make the same amendment in the right hand column of 6.8.2.5.2 of ADR for tank-containers.

Delete footnote 13 in RID/ADR.

The working group recommends that the Joint Meeting should adopt the amendments.

**11. Document 2003/67 (UIP) (Minimum thickness of tank walls)**

In accordance with the March 2003 report of the working group, the representative of UIP submitted a new proposal to take account of localized reduction of wall thickness caused by corrosion or damage, and provided the relevant explanations.

The majority of the working group was again unable to support the proposal since in part it permitted too great a reduction in wall thickness. In particular, the framework criteria and conditions given in the document should be justified in greater detail. Problems were also perceived with reference to older tanks.

The representative of UIP was requested to revise his document in the light of the results of the discussion.

**12. Document 2003/57 and INF.36 (Norway) (Introduction of RID/ADR tank requirements for UN No. 3375 ammonium nitrate emulsions)**

The representative of Norway introduced document INF.36, replacing document 2003/57, in connection with the application for RID/ADR tanks and stressed once again that the objective of the proposal was, for safety reasons (no unnecessary confinement), to use the “weakest” tanks possible for the carriage of UN No. 3375 ammonium nitrate emulsions. Provision should also be made for pressure-relief devices in order to prevent unnecessary caking of the substance in the tank.

The working group pursued this line of thought and proposed the following additions and amendments while keeping the substance of the proposed texts:

In Chapter 3.2, Table A, for the entries of UN No. 3375:

In column (12), insert “LGAV (+)” for the liquid entry and “SGAV (+)” for the solid entry;

In column (13), insert “TU3, TU12, TU26, TU39, TE10, TE23, TA1, TA3”;

In column (14), insert “AT” (ADR only);

In column (20), insert “50”.

Add to 4.3.4.1.3 (d):

UN No. 3375 ammonium nitrate emulsion, suspension or gel, liquid: code LGAV;

UN No. 3375 ammonium nitrate emulsion, suspension or gel, solid: code SGAV;

Add a new “TU39” to 4.3.5:

“TU39: The suitability of the substance for carriage in tanks shall be demonstrated. The method to evaluate this suitability shall be approved by the competent authority. One method is test 8 (d) in Test Series 8 (see Manual of Tests and Criteria, Part 1, subsection 18.7).

Substances shall not be allowed to remain in the tank for any period that could result in caking. Appropriate measures shall be taken to avoid accumulation and packing of substances in the tank (e.g. cleaning, etc.).”

Add a new “TE23” to 6.8.4 (b):

“TE23: Tanks shall be equipped with a device of a design which precludes its obstruction by the substance carried and which prevents leakage and the build-up of any over- or under-pressure inside the shell.”

Amend TE10 as follows:

Replace “solidified ammonium nitrate” by “the solidified substance”.

Add a new TA3 to 6.8.4 (c):

“TA3: This substance may be carried only in tanks with the tank code LGAV (+) or SGAV (+); the hierarchy in 4.3.4.1.2 is not applicable.”

The working group requests the Joint Meeting to approve the proposal.

### **13. Document INF.8 (UIC) (Chapters 4.2 and 6.7, UN portable tanks)**

The contents of the document were discussed at the March session of the Joint Meeting, both in plenary and in the working group as document 2003/33 (see TRANS/WP.15/AC.1/92/Add.1, paragraph 14). Since this was in principle a matter concerning UN mobile tanks, the working group did not at that time feel that it was in a position to deal with document 2003/33. It had, however, stated it was prepared to take an interest if the problems involved relevant details. The representative of UIC was submitting document INF.8 with this in mind.

The first problem put forward, concerning the marking on the tanks of instructions for carriage in tanks, was discussed by the working group. It would be able to support a relevant proposal for an addition to the United Nations Model Regulations. The working group shared the point of view of the representative of UIC concerning the inclusion in Chapter 4.2 of instructions for carriage in tanks for MEGCs.

The Joint Meeting was requested to support the opinion of the representative of UIC and the working group in order to ease the task and achieve the acceptance of relevant proposals by the United Nations Sub-Committee of Experts.

The other wishes for amendments put forward, concerning the new definition of “design pressure” in Chapter 6.7, were not supported by the working group. In the circumstances, a policy discussion would be needed, which, unless a relevant proposal was prepared, could not be successful or achieve its objective.

The working group was not, however, unaware that the application of “design pressure” in accordance with the definition caused problems which would have to be resolved more appropriately.

### **14. Document INF.15 (Netherlands) (Safety devices for tanks in accordance with Chapter 6.10)**

The document deals mainly with the question - which had remained open - of the minimum diameter for the safety valves required.

The reference in the original proposal by Germany to the minimum required rate of discharge formula for gases in section 6.7.3 was incorrect and should refer to section 6.7.2 for liquids and solids. The working group was unanimously of the opinion that the conditions did



not exist for the application of this formula (in the event of fire). A test had been made with the reference to the formula to obtain a comparative measurement for rate of discharge depending on the surface area of the tank, although this was unnecessary in the present case.

For this reason the working group decided that the fifth paragraph, which existed only in the English version of document TRANS/WP.15/AC.1/92/Add.2 (reference to Chapter 6.7), should be deleted.

The working group finally discussed the question still pending of the minimum diameter of the safety valve.

The danger for tanks of small openings being blocked by waste (substances) was considered to be an argument for the choice of a large diameter. Some delegations did not share this opinion and wished to follow the proposal by the Netherlands in document INF.15 (choice of a diameter of limited size). The last subparagraph but one of 6.10.3.9 in document TRANS/WP.15/AC.1/92/Add.2 was reworded as a compromise solution.

Other proposals for drafting changes in the second and third subparagraphs of document INF.15 were also adopted (concerns the English version only).

#### Proposal

Subsection 6.10.3.9 in full, as amended, now reads:

“The shells of vacuum-operated waste tanks shall be fitted with a safety valve preceded by a bursting disc.

The valve shall be capable of opening automatically under a pressure between 0.9 and 1.0 times the test pressure of the tanks to which it is fitted. The use of dead weight or counterweight valves is prohibited.

The bursting disc shall burst at the earliest when the initial opening pressure of the valve is reached and at the latest when this pressure reaches the test pressure of the tank to which it is fitted.

Safety devices shall be of such a type as to resist dynamic stresses, including liquid surge.

The space between the bursting disc and the safety valve shall be provided with a pressure gauge or suitable tell-tale indicator for the detection of disc rupture, pinholing or leakage which could cause a malfunction of the safety valve.”

The working group requests the Joint Meeting to approve the amendments proposed.

#### **15. Document INF.16 (Netherlands) (Leakproofness test of tanks)**

After a brief discussion, the working group was of the unanimous opinion that the proposed additions to 6.8.2.4.3 and 6.8.2.4.2 should be approved.

Proposals:

Amend the second sentence of the second paragraph of 6.8.2.4.3 as follows: add after “liquids”: “and solids in granular or powdery state.”

Amend the third paragraph of 6.8.2.4.2 as follows: add after “leakproofness tests”: “at an effective internal pressure, at least equal to the maximum working pressure,”.

The working group recommends that the Joint Meeting should adopt these additions.

**16. Document INF.17 (Netherlands) (Special provisions of 6.8.4)**

Following a discussion, the document was adopted with a minor correction: the proposed text, containing an amendment of special provision TE6, reads:

“TE6: Tanks may be equipped with a device of a design which precludes its obstruction by the substance carried and which prevents leakage and the build-up of excess over- or under-pressure inside the shell.”

This special provision also applies to pressurized tanks and in practice was not applicable in the original version for these tanks; it now permits a practical application of letter “V” in the tank code.

For this reason the working group recommends that the Joint Meeting should adopt the proposed amendment of special provision TE.6.

**17. Document INF.18 (Netherlands) (sect. 3.2.1)**

This document deals with a consequential amendment needed to take account of substances (+) in section 3.2.1 and was adopted by the working group without opposition. The proposal is worded as follows:

Amend the fifth paragraph of the explanatory text of column (12):

“The indication of a (+) after the tank code means that the alternative use of the tanks is permitted only where this is specified in the certificate of type approval.”

The Joint Meeting is requested to approve this amendment.

**18. Document INF.34 (France) (sect. 3.2.1)**

The document contains a clarification of the tank code in section 3.2.1 and the working group recommends its adoption by the Joint Meeting. The proposal is reproduced below:

In 3.2.1, column (12), add the following text after the second paragraph:

“If for solids only a tank code for liquids (L) is indicated in this column, this means that this substance is only offered for carriage in tanks in the liquid (molten) state.”

In the second paragraph replace “carried” by “offered for carriage”.

In this context, a delegate drew attention to a clear omission concerning the introduction of a tank code with reference to UN No. 3077 “ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.”.

Substances assigned to this n.o.s. entry are also carried in the molten state by the chemicals industry. In order to determine the exact tank code for this type of transport, the second tank code “LGBV” should be inserted in column (12) of Table A in Chapter 3.2.1.

Proposal:

Insert tank code “LGBV” in column (12) of Table A in Chapter 3.2 for the entry 3077 “ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.”.

The Joint Meeting is requested to approve this amendment which is in part a question of wording.

**19. Document INF.46 (Netherlands) (New special provision TE24 for UN Nos. 3256 and 3257)**

The document was discussed in detail and the special provision proposed was, for practical reasons, considered to be both judicious and necessary.

Proposal:

(1) Add a new special provision TE24 to 6.8.4, to read:

“TE24: If tanks, intended for the carriage and handling of bitumen, are equipped with a spray bar at the end of the discharge pipe, the closing device as required by 6.8.2.2.2 may be replaced by a shut-off valve, situated on the discharge pipe and preceding the spray bar.”

(2) Insert special provision TE24 in column (13) of Table A of Chapter 3.2 for the entries for UN Nos. 3256 and 3257.

The working group recommends that the Joint Meeting should adopt the new special provision TE24.

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