

**COMMITTEE OF EXPERTS ON THE  
TRANSPORT OF DANGEROUS GOODS  
(Twenty-first session, 4-12 December 2000  
agenda item 2 (b))**

**Multimodal tank transport  
MAWP, design pressure and test pressure of portable tanks**

**Transmitted by the Expert from the United States**

1. The expert from the United States does not agree with the proposals in CETDG/21/INF.3 submitted by the International Union of Railways (IUR). The problems elaborated and solutions proposed would cause confusion, are in certain respects inconsistent with current requirements and would not enhance the user friendliness of the Model Regulations. In this paper alternative proposals are provided to attempt to clarify the fact that the minimum test pressure must be the highest pressure derived from either the T Code or a calculation based on 1.5 times the design pressure. A proposal is also included to more specifically indicate the shippers responsibility for ensuring the appropriate portable tank is used for a substance when it is transported in a portable tank.
  
2. Some of our specific concerns with the proposal in CETDG/21/INF.3 are:
  - (a) The statement in paragraph 2 a) of INF.3 is not correct. TP27, 28 and 29 allow lower test pressures for numerous n.o.s. entries based on calculation of the test pressure using the definitions in 6.7.2.1. In this case a lower value than that specified according to the T Code is permitted. The proposal in INF. 3 would basically void the provisions of TP27, 28 and 29 and this would have significant consequences for shippers considering that the test pressures specified in the T Codes assigned to n.o.s. entries are very conservative. The Committee previously agreed to the higher minimum test pressure values for n.o.s. entries on the basis that lower test pressures could be used if the shipper calculated the necessary test pressure based on the definitions in 6.7.2.1.
  
  - (b) The proposed table in paragraph 2 b) of INF.3 which provides MAWP, Design pressure and Test pressure values is not correct since it is based on the assumption that the difference between MAWP and design pressure is always 0.35 bar. The design pressure definition in 6.7.2.1 shows that 0.35 bar is the minimum head pressure and that higher head pressures based on the dynamic forces in 6.7.2.2.12 need to be taken into account. The expert from the United States does not agree that the proposed table is necessary and believes that it adds more confusion than value.
  
  - (c) In paragraph c) of INF.3 the observer from IUR states that some substances require higher test pressures than prescribed by the T Codes assigned to specific substances. If this is the case, then IUR should identify these deficiencies and remedies in a proposal to the Committee or Sub-Committee. The intent of the portable tank working group was that except in the case where TP 27, 28, 29 are assigned to a substance, the test pressure shall not be less than the highest pressure prescribed in either the applicable portable tank instruction assigned in the DGL or from the result of a calculation based on 1.5 times the design pressure. We agree that this is not currently clearly indicated in the Model Regulations and have

proposed text to address this in this paper. The proposal from IUR would only take into account the T Code test pressure values. This would result in some substances being transported in tanks with insufficient test pressures. This is contrary to the concerns raised by IUR and the intent of the portable tank working group. The expert from the United States is proposing clarification that the highest pressure prescribed in either the applicable portable tank instruction assigned in the DGL or from the result of a calculation based on 1.5 times the design pressure must be taken into account and that the shipper has the ultimate responsibility for ensuring that the proper tank is used for a given substance, mixture or solution.

## Proposal

2. To simplify the definition of design pressure in 6.7.2.1 the following amendment is proposed:

*Design pressure* means the pressure to be used in calculations required by a recognized pressure vessel code. The design pressure shall be not less than the highest of the following pressures:

- (a) The maximum effective gauge pressure allowed in the shell during filling or discharge; or
- (b) The sum of the MAWP (as defined above) and a head pressure determined on the basis of the dynamic forces specified in 6.7.2.2.12, but not less than 0.35 bar;
- (c) Two thirds of the minimum test pressure specified in the applicable portable tank instruction in 4.2.4.2.6;

3. To avoid any misunderstanding concerning the appropriate minimum test pressure that must be used in selecting the appropriate portable tank for a given substance two amendments are proposed:

(a) A note should be added to the portable tank instruction table (T1-T22) to explain the meaning of the minimum test pressure values in the tables as follows:

Note: Except in the case where TP 27, TP28 or TP29 is assigned to a substance, the test pressure shall not be less than the highest pressure value prescribed in the table for the applicable portable tank instruction or from the result of a calculation based on 1.5 times the design pressure (see also 4.2.1.9.1 and 6.7.2.1).

(b) The definition for test pressure should be amended as follows:

*Test pressure* means the maximum gauge pressure at the top of the shell during the hydraulic pressure test equal to not less than 1.5 times the design pressure. Minimum test pressures for portable tanks intended for specific substances are specified in the applicable portable tank instruction in 4.2.4.2.6. *However, except in the case where TP 27, 28, 29 are assigned to a substance, the test pressure shall not be less than the highest pressure value prescribed in either the applicable portable tank instruction in 4.2.4.2.6 or from the result of a calculation based on 1.5 times the design pressure;*

4. To clarify the shippers responsibility the following amendment is proposed to paragraph

## 4.2.1.9.1:

4.2.1.9.1 Prior to filling, the shipper shall ensure that the appropriate portable tank is used for the substance to be transported. The shipper shall ensure that:

- (a) the portable tank is authorized for the substance;
  - (b) the test pressure of the portable tank is appropriate based on a calculation of the test pressure taking into account the definitions in Chapter 6.7 and the prescribed minimum test pressure prescribed in the applicable T Code and special tank provisions;
  - (c) the minimum thickness, bottom openings and pressure relief devices are consistent with the prescribed requirements in these Model Regulations including those indicated in the applicable T Code and special tank provisions assigned to each substance; and
  - (d) the portable tank is not loaded with substances which in contact with the materials of the shell, gaskets, service equipment and any protective linings, are likely to react dangerously with them to form dangerous products or appreciably weaken the material.
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