CETDG/21/INF.3

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 International Union of Railways (IUR)

Documents of reference:

UN Model Regulations 11th edition, 4.2.4.2.6 and 6.7.2.1
ST/SG/AC.10/25/Add.2 dated 2-11-1999
ST/SG/AC.10/C.3/1999/66 dated 13-09-1999
UN/SCETW/17/INF.23
ST/SG/AC.10/C.3/34, paras. 18 and 19

Reference is made to the discussion in the seventeenth session of the Sub-Committee of Experts on the Transport of Dangerous Goods on the proposal from the expert of Argentina and the documents from the International Union of Railways about the two systems in the Model Regulation to establish the MAWP, the design pressure and the test pressure of portable tanks:

1) The first system starts from the definitions of MAWP, design pressure and test pressure in 6.7.2.1. If all the relevant physical data are known, the three pressures can be calculated for an individual substance.

2) The second system fixes five different minimum test pressures (1.5, 2,65, 4, 6 and 10 bar) for all 22 portable tank instructions, A systematic approach for assigning portable tank requirements to substances in classes 3 to 9 was developed in ST/SG/AC.10/25/Add.2 dated 2-11-1999.

This means that regardless of the definition of the test pressure in 6.7.2.1, by the portable tank instruction indicated in Table 3.2.2 a minimum test pressure is given for all individual entries allowed in tanks.

This is a user-friendly system, appropriate for multi-purpose portable tanks (the vast majority of portable tanks).

The existence of two different systems causes, however, in practice some problems:

a) The test pressure of a portable tank, used for a certain substance may never be lower than the values indicated in Table 4.2.4.2.6 for the tank instruction, even if calculation according to the definitions in 6.7.2.1 leads to a lower value.

Proposal:

Amend the second sentence of the definition of Test pressure in 6.7.2.1 to read:

"The minimum values for the test pressures, specified in the applicable portable tank instruction in 4.2.4.2.6, have to be complied with."

b) It is expected that the vast majority of all portable tanks will be tested with the minimum test pressures, indicated in 4.2.4.2.6. The question is: which values for the design pressure and MAWP will be associated with those minimum test pressures. Application of the definitions in 6.7.2.1 would lead to the following minimum values of the design pressure and MAWP:

Test pressure Design Pressure MAWP (minimum values in bar)

1,5	1.00	0.65
2.65	1.77	1.42
4	2.67	2.32
6	4.00	3.65
10	6.67	6.32

Proposal:

Although this relationship is indicated under letter (c) of the definition of the design pressure, it is proposed to introduce this small table of the relationships of the minimum values of Test Pressure, Design Pressure and MAWP after the first table of 4.2.4.2.6. This enables the user to check the values of the test pressure and the MAWP on the metal plate according to 6.7.2.20.

c) Major problems are to be expected with some liquids with very low boiling points, like 1089 acetaldehyde, where Tank Instruction T11, minimum test pressure 6 bar, is allowed. Application of the definitions of MAWP and design pressure in 6.7.2.1 may well lead to a test pressure over 6 bar, and T15 might be more appropriate. The question is: which system in the Model Regulation takes precedence for the determination of the test pressure: the calculation according to the definitions or the rationalized approach for the tank instructions in 4.2.4.2.6. The IUR is of the opinion, that this situation is very confusing and that one minimum test pressure should be applicable to all substances covered by the same tank instruction.

Proposal:

Add to the first table of 4.2.4.2.6 the following:

"***NOTE**: The minimum test pressures indicated in the second column of this table are applicable to all substances covered by the same tank instruction."*

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