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**COMMITTEE OF EXPERTS ON THE TRANSPORT OF
DANGEROUS GOODS AND ON THE GLOBALLY
HARMONIZED SYSTEM OF CLASSIFICATION
AND LABELLING OF CHEMICALS**

**Sub-Committee of Experts on the
Transport of Dangerous Goods**
(Twenty-second session, 2-6 December 2002
agenda item 4(a))

NEW PROPOSALS

Outstanding issues

MAWP, design pressure and test pressure of portable tanks Transmitted

by the International Union of Railways (UIC/IUR).

Reference is made to the discussions at the twenty-first session of the Sub-Committee of Experts on the Transport of Dangerous Goods on document ST/SG/AC.10/C.3/2002/21 and to para. 37 to 40 of the report ST/SG/AC.10/C.3/42.

The UIC/IUR regrets that the problems outlined in the document could not be solved and that from the discussions even new problems, not mentioned in the report, emerged.

In view of the important role of railway testing institutes worldwide in the procedure for type approval of UN portable tanks (see 6.7.2.19.1, 6.7.3.15.1 and 6.7.4.14.1), there is an urgent need to solve the outstanding problems as soon as possible.

Head pressure.

One of the proposals in document ST/SG/AC.10/C.3/2002/21 was to simplify the provisions for the 'head pressure' in the definition of design pressure and retain only the fixed value of 0.35 bar in the definition. The expert from Sweden, however, explained that the value of 0.35 bar is only valid for small portable tanks with a capacity of ± 450 L and that the head pressure for a 20 ft. portable tank could be as high as 1.2 bar. These are head pressures on the basis of the forces specified 6.7.2.2.12. According to the provisions of chapter 6.7, the prototype of the portable tank should be capable of absorbing the forces of an impact test not less than 4 times (4g) the MPGM of the fully loaded portable tank. It is not clear how high the head pressure is, associated with such an impact test, but it might be considerably higher than the forces specified in 6.7.2.2.12. The question can even be asked: does any value of a head pressure cover in a realistic way the dynamic stresses in the shell on the moment of the impact test? In the practice of type approval of railway tank wagons the dynamic stresses in the shell during the impact test are measured on

a great number of relevant points of the shell. This gives a better impression of the behaviour of the shell than fixing an overall value of a head pressure.

Design pressure.

The main purpose of the UIC/IUR proposal ST/SG/AC.10/C.3/2002/21 was however to improve the user-friendliness of the definition of design pressure in 6.7.2.1. The design, test and working pressures of vast majority of portable tanks are established on the basis of test pressures in the table of portable tank instructions in 4.2.5.2.6. Therefore in the definition of design pressure in 6.7.2.1, the complicated procedure under (b) should be an alternative to the simple reference to the values in table 4.2.5.2.6 in (c). Pending future discussions on the values of the 'head pressure', the UIC/IUR proposes for the time being the following definition of 'design pressure' in 6.7.2.1:

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) Either:
 - (i) (existing text)
 - (ii) (existing text)
 - (iii) (existing text)or:
two thirds of the minimum test pressure specified in the applicable portable tank instruction in 4.2.5.2.6. "
