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Joint Meeting of the RID Safety Committee and the
Working Party on the Transport of Dangerous Goods
(Bern, 24-28 March 2003)

VACUUM-OPERATED WASTE TANKS

Transmitted by the Government of Germany*

The secretariat has received from the Central Office for International Carriage by Rail (OCTI) the proposal reproduced below.

Introduction

With the introduction of Chapter 6.10, the requirement of a safety valve preceded by a bursting disc appeared for the first time. In Germany, these tanks, like tanks for tank-vehicles, have to date been constructed without safety devices to offset excess pressure, although the construction model was designed to resist pressure during operation.

In the preparation for the Joint Meeting (Bern, 18-22 March 2002), Germany prepared document INF.8, which was discussed in the working group on tanks.

The requirement of an increase in the design pressure as an alternative to the safety device was rejected by the majority of members of the working group with the argument that

* Circulated by the Central Office for International Carriage by Rail (OCTI) under the symbol OCTI/RID/GT-III/2003/12.

increases in pressure could occur, for example, as a result of reactions from the interaction of the substances carried, and that the bursting of the tank could only be avoided by the use of safety devices.

In the opinion of the representative of Germany, an adequate degree of safety could be achieved by anticipating a sufficient resistance of the tank to pressure, particularly as no design criteria for safety valves existed and the carriage in these tanks of substances which reacted dangerously with each other was prohibited.

It was announced at the same time that a redrafted document would be submitted to the next RID/ADR Joint Meeting (Geneva, 9-13 September 2002) (see report TRANS/WP.15/AC.1/88-OCTI/RID/GT-III/2002/A, para. 83). This took the form of informal document INF.12 which, however, was discussed only briefly (see TRANS/WP.15/AC.1/90-OCTI/RID/GT-III/2002-B, para. 16).

After a further internal discussion, we arrived at the conclusion that the argument put forward in the working group with reference to safety devices, to the effect that a burst resulting from increased pressure due to heating or the decomposition of the substances could only be avoided by means of adequately calculated safety devices could not be rejected out of hand. Germany would, however, duly submit an alternative proposal for a design type completely resistant to pressure shocks due to operation.

Proposal

With reference to the criteria required for the safety device, we propose, on the basis of 6.8.3.2.9, that the following text should be inserted in 6.10.3.9:

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

The intermediate bursting disc shall burst at earliest when the initial opening pressure of the valve is reached and at latest when this pressure exceeds the opening pressure by 10%. The safety devices shall be of such a type as to resist dynamic stresses, including liquid surge.

The required capacity of the safety devices shall be calculated in accordance with the formula contained in 6.7.3.8.1.1.”

Justification

Designing the safety device in this form ensures a sufficiently broad profile and guarantees an identical procedure.

In our opinion, dimensioning for fires with higher levels of outflow is not necessary until better results are available.
