INF 15

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
(Bern, 24-28 March 2003, agenda item 2)

PART 6.8 OF RID/ADR

Comments and Proposals concerning TRANS/WP15-AC1/2003/1

Transmitted by EIGA

SUMMARY	
Executive Summary:	EIGA proposes that instead of adopting the text proposed by Germany for battery-vehicles in TRANS/WP15-AC1/2003/1, it would be more appropriate if the requirements for battery-vehicles were clarified by inserting text based on existing requirements for UN MEGCs.
Action to be taken:	Add new text to 6.8.3.2.18, renumber exiting text as 6.8.3.2.19 through to 6.8.3.2.27
Related documents:	TRANS/WP15-AC1/2003/1

Introduction

EIGA acknowledges the concern raised by the tube trailer accident described in the paper TRANS/WP15-AC1/2003/1. The valves were vulnerable to damage, but the impact was very severe and the imprint of the tubes was evident in the rear wall of the cab of the impacting truck. It is arguable, that even with stronger protection, the valves could have been broken in this accident. The problem addressed is not one which is wide spread among European battery-vehicles and proposal from Germany is based upon only one accident to one design of battery-vehicle. EIGA members operate in excess of 1000 battery-vehicles and product release in accidents is a rare event. That is not to say that EIGA wishes to avoid any revision to the regulations for battery-vehicles, only to set the problem in context and ensure that text changes are appropriate.

EIGA argues that battery-vehicles/wagons are not identical to tanks and inserting text designed for tanks will not achieve the aims for which Germany hopes. Before addressing the text, it is important to understand the construction of battery-vehicles.

The Construction of Battery-vehicles

Battery-vehicles/wagons are currently constructed from tubes, cylinders and bundles. Whilst Pressure drums and tanks are also foreseen in the regulations, there are few, if any examples in Europe.

Fig. 1) Cylinder battery-vehicle

Fig. 2) Cylinder battery-vehicle

Fig. 3) Bundle battery-vehicle

It is immediately evident from the above pictures that, on these typical examples of battery-vehicles constructed from cylinders and bundles, all valves and manifolding are protected from external impact by the structures holding the receptacles.

Unlike tanks, stop valves on battery-vehicles/-wagons are often not mounted on the pressure receptacles; 6.8.3.2.20 allows the stop valves to "be provided for within the manifolding arrangement".

Fig. 4a) Tubes with stop valves mounted on vehicle chassis

Fig. 4b) Substantial structure on rear of vehicle protects the valves.

Even in the case of battery-vehicles using tubes the valves need not be mounted on the tubes and Fig. 4 shows such an example where the stop valves are remotely mounted.

In other designs using valves fitted on the tubes, mounting the tubes well forward of the rear of the vehicle protects the valves and manifolding. In the case shown in Fig. 5, the valve is 0.5 metres inboard end of the chassis.

Fig. 5a) Battery-vehicle with tubes

Fig. 5b) 0.5 metre distance from valve to rear of vehicle

In summary, the stop valves can be in many positions on battery-vehicles and in many cases they are protected by their positions within the chassis and within the outlines of the packs of receptacles. Protection of the manifold and ensuring suitable flexibility both to withstand vibration and the more severe shock if (packs of) receptacles move as a result of accidental impact are also important safety features of battery-vehicles/-wagons.

Consideration of Text

The text proposed by Germany is based upon tanks and even mentions internal shut-off devices, which are, as yet, unknown in battery-vehicles/-wagons. It only addresses the construction of manifolds in a very general way. Furthermore, almost identical wording already appears in 6.8.2.2.2 paragraph 6 and applies to all items of equipment covered by Chapter 6.8, and at least in the case cited in German proposal 2003/1, it has failed to have the effect desired. Repeating it in 6.8.3.20 may draw it to the attention of designers, but it only addresses one issue, not the need to ensure the integrity of the pressure containment as a whole.

EIGA therefore turned to the text on UN MEGC's which appears in 6.7.5.3.1 of RID/ADR 2003. To EIGA this text seems a much more appropriate basis to address the issue of safety related to items of equipment on battery-vehicles/wagons. Using this text has the advantage that experts at the UN agreed it in the year 2000 so it embodies the most recent considerations on the subject from a broadly based body of Class 2 experts. Also, its use is in line with the policy of adopting UN text where possible in the interests of global harmony.

6.7.5.3.1 is reproduced below with comments on each sentence inserted in italics.

6.7.5.3.1 Service equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. *(Similar text already appears in 6.8.2.2.1 sentence 2. Requires modification to include all items of equipment.)*
When the connection between the frame and the elements allows relative movement between the sub-assemblies, the equipment shall be so fastened as to permit such movement without damage to working parts. *(New text which is very*

relevant to battery-vehicles; requires minor modification to account for the absence of a frame on battery-vehicles and battery-wagons.)
The manifolds, the discharge fittings (pipe sockets, shut-off devices), and the stop-valves shall be protected from being wrenched off by external forces. (*Similar wording appears in 6.8.2.2.2 paragraph 6, but it does not specifically mention manifolds. This text has a similar intent to the propsal 2003/1 from Germany, but uses more appropriate terminology.)*
Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing, or releasing the pressure receptacle contents. *(New text which is relevant to battery-vehicles/wagons. The existing 6.8.3.2.18 paragraph 2 requires resistance to expasion, contraction,shock and vibration.)*
The filling and discharge devices (including flanges or threaded plugs) and any protective caps shall be capable of being secured against unintended opening. (*Similar wording appears in 6.8.2.2.2 paragraph 6)*

EIGA therefore proposes that this text be inserted with slight modifications under the heading "***Items of equipment for battery-vehicles and MEGCs***".

Proposal:
Insert the following new text in ADR. Alternative wording for RID is shown in brakets. Words which do not appear in 6.7.5.3.1 are underlined.

6.8.3.2.18 Service <u>and structural</u> equipment shall be configured or designed to prevent damage that could result in the release of the pressure receptacle contents during normal conditions of handling and transport. When the connection between the battery-<u>vehicle (-wagon) or MEGC</u> frame and the elements allows relative movement between the sub-assemblies, the equipment shall be so fastened as to permit such movement without damage to working parts. The manifolds, the discharge fittings (pipe sockets, shut-off devices), and the stop-valves shall be protected from being wrenched off by external forces. Manifold piping leading to shut-off valves shall be sufficiently flexible to protect the valves and the piping from shearing, or releasing the pressure receptacle contents. The filling and discharge devices (including flanges or threaded plugs) and any protective caps shall be capable of being secured against unintended opening.

Renumber the existing 6.8.3.2.18 to 6.8.3.2.26 as 6.8.3.2.19 to 6.8.3.2.27, respectively.

Justification

This proposal will clarify and emphasise existing requirements on designers to address the issues of protecting maifold piping and valves from external stresses. It will also add new requirements to design for movement of elements and ensure flexibility in the manifolds. Since it is based on UN text, it will enhance global harmony of approach.

Safety: the proposed text will affect safety positively.

Feasibility: no problems.

Enforceability: no problems.

_____