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**COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS**

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**WORK OF THE SUB-COMMITTEE OF EXPERTS
ON THE TRANSPORT OF DANGEROUS GOODS**

Development of provisions for the transport of gases

**Comments on the report of the Working Group on Gas Receptacles and
Multiple-Element Gas Containers (MEGCs)**

Transmitted by the expert from the United States of America

The following comments are provided relative to report of the Working Group on Gas Receptacles and Multiple-Element Gas Containers (MEGCs) in ST/SG/AC.10/2000/22:

1.2.1: Definitions

The proposed definition for “test pressure” in 1.2.1 should be moved to Chapter 6.2 because this definition is unique to gas pressure receptacles. There are other definitions for test pressure for portable tanks (see for instance 6.7.2.1) and other packagings which conflict with the pressure receptacle test pressure definition.

2.2.1.2: Compressed and liquefied gas definitions

In 2.2.1.2 the working group is proposing to change the definitions of compressed and liquefied gases by adopting a reference temperature of -50 °C (currently the Model Regulations use 20 °C) consistent with a draft ISO standard, ISO 11622 Gas cylinders - Conditions for filling gases into cylinders.

The proposed reference temperature of -50 °C will effectively require the amendment of at least 10 proper shipping names (PSNs) in the Dangerous Goods List and will affect numerous gas mixtures. In 1993, the UN Recommendations undertook significant amendments to Class 2 PSNs based on a Joint Meeting proposal (ST/SG/AC.10/C.3/R.451). This paper proposed to add the word "COMPRESSED" to the PSNs for: UN 1979, 1980, 1981, 1982, 2036, 2193, 1957, 2203, 1016, 1023, 1071, 1911, 2600, 1008, 1859, 2198, 2417, 2451, 1660 and 2190; and to delete the word: "LIQUEFIED" in the PSNs for UN 1027, 1026, 1053, 1005, 1079 and 1067 in order to align the PSNs with the 20 °C reference temperature in the gas definitions of Part 2 of the Recommendations. These proposals were adopted in the 8th revised edition of the UN Recommendations. The consequences of changing the reference temperature from 20 °C to -50 °C will effectively reverse many of the decisions taken in 1993. The expert from the United States of America is currently evaluating the safety benefits against the costs of making this change.

4.1.6.1.8 – Protection of valves

A recent review of incident data involving gas releases from cylinders has revealed that approximately 30% of all reported releases for the period of 1990-2000 are attributed to inadvertent releases from valves due to damage sustained from improper handling or inadequate blocking and bracing. Further analysis of the incidents indicates that overpacks do not provide adequate valve protection in all cases and that many overpacked pressure receptacles sustained valve damage that resulted in gas releases when the valves were unprotected by any other means other than the overpack. On this basis, the expert from the United States of America does not agree that 4.1.6.1.8(e) (i.e. use of an overpack as the only means of valve protection) provides a sufficient means of valve protection and that (e) should be either deleted in paragraph 4.1.6.1.8 or amended to require that the overpack be subject to the packaging requirements of Chapter 6.1 at the PG I performance level without leakage from the pressure receptacle or its valve. This would only be required if the valve is not protected as described in 4.1.6.1.8(a) through (d).

4.1.6.1.9 Periodic inspection

The periodic test exception for non-refillable cylinders need only be mentioned under the section on periodic test requirements (6.2.1.5.4).

6.2.2.6 and 6.2.2.7 Marking

The reference to ISO 3166-1; 1997 needs to be considered by the Committee so that the impact to all countries can be considered. The text proposed by the working group would require all countries to use a two digit country code according to ISO 3166-1; 1997. In examples provided, Germany is identified as the approval country using the code "DE" and Italy is shown as "IT". The United States of America and other countries such as Canada, China and Australia use a three digit country codes. The United States of America is not in favour of changing to a two digit code. The United States of America can support use of either the two or three digit codes as specified in ISO 3166-1; 1997. However, a number of countries including France, Germany and Italy currently use single digit codes according the Distinguishing Signs of Vehicles in International Traffic document (i.e. Austria -"A", Belgium "B", France "F", Germany "D", Italy "I", Japan "J", Luxembourg "L", Malta "M", Norway "N", Portugal "P", Spain "E", Sweden "S" and Thailand "T" all use single digit codes) and some of the codes specified in ISO 3166-1 conflict with the codes in the Distinguishing Signs of Vehicles document (e.g. AU/AUT vs. AUS for Australia and AR/ARG vs. RA for Argentina). Currently the Model Regulations use country codes as specified in the document "Distinguishing Signs of Vehicles in International Traffic Notified to the Secretariat General of the United Nations in Accordance with the 1968

Convention on Road Traffic.” This document includes one, two and three digit country codes. Several countries have chosen to use identifying marks other than those specified in this document (e.g. CAN vs. CDN for Canada) and some countries approving UN packagings are not listed. This has caused some confusion. A further deficiency of the Distinguishing Signs of Vehicles document is that it is incomplete in that many countries are not included.

Another marking issue involves whether the test pressure of the pressure receptacle should be marked in the certification sequence marking (e.g. ISO 11118/PH40BAR/2000-07/NL/IB/MM/456456) or in a conspicuous place on the neck as prescribed in the draft ISO standard ISO 13679 Gas Cylinders - Stamp Marking. The expert from the United States of America has not yet finalized a position on this issue, but will attempt to finalize his position in time for the Committee meeting in December.

4.2.4.7.2 Filling of MEGCs

Paragraph 6.7.5.2.2 indicates that “All of the elements in a MEGC shall be of the same design type.” This does not prohibit elements of different working pressures to be assembled into MEGCs which may result in safety concerns relative to filling. It is not an uncommon practice to have elements within MEGCs that have different working pressures. The expert from the United States of America believes that the requirements in 4.2.4.7.2 concerning the filling requirements for MEGCs should be revised to indicate that:

“Elements of MEGCs shall be filled according to the filling ratios and filling provisions specified in packing instruction P200 for the specific gas being filled into each element. In no case shall a MEGC or group of elements be filled as a unit in excess of the lowest working pressure of any given element in the MEGC or group of elements being filled.”

6.7.5.2.6 Compatibility

This paragraph should be changed to make it consistent with the standard text used in 4.1.1.2 for compatibility of packagings as follows: “The materials of the MEGC, including any devices, gaskets, and accessories, which are in direct contact with the gases intended for transport in the MEGC, shall not be affected or significantly weakened by contact with the gases and shall not cause a dangerous effect (e.g. catalysing a reaction or reacting with the gases) with the gases.”
