NHA WG 2 (Metal Hydrides) Report

Dr. Bill Summers began by reviewing the minutes from the last WG 2 meeting on *September 27, 2001* and the last WG2 conference call held on *January 10, 2002*.

The main issue addressed during the conference call was a letter that Coleman Powermate received from the U.S. Department of Transportation (DOT) rescinding a previous letter concerning the need for an exemption for charged metal hydride containers. The subsequent letter stated that an exemption under 49CFR107.105 is required for charged metal hydrides. Unknown to the participants at the time of the telecon, Coleman Powermate applied for and received an exemption for their particular cylinder design in a letter for DOT dated 12/21/01.

Mr. Steve Leutbecher of Coleman said there are two main issues to address: relief valves and the integrity of the cylinder due to the volume expansion of the metal hydride powder. A third less important issue is classification. (The DOT considers hydrogen gas as a primary hazard.) Mr. Leutbecher said a standard needs to be developed that would spell out testing procedures for cylinders with MH powder. He stated that the exemption process could be expected to take approximately 1.5 years. Currently, each company will need to work with DOT to develop an exemption for their own product. The Coleman exemption deals with a DOT-spec cylinder, which is already subject to testing under 178.46, paragraphs C5i-ii. The use of non-DOT spec containers will require considerably more testing and regulations.

Dr. Summers suggested that the draft standard be given the working title of "Transportable Metal Hydride Containers."

Other items of note include:

CGS1.1 has been revised to include metal hydrides. This is being addressed by the Compressed Gas Association.

The Department of Transportation is establishing a part identification number for charged metal hydrides: DOT PIN NA9279: Hydrogen absorbed in metal hydride (material inside container).

The group discussed the need for a template for their draft standard, and decided that since the ultimate goal is an international standard, the ISO template is the first place to go for a template for WG2's draft standard.

WG2's draft standard will be for non-bulk capacity cylinders.

Since each company has unique and proprietary means of accommodating the volume expansion issue (e.g. internal structures), it was agreed that a performance-based standard should be used. A test procedure proposed by Frank Lynch (Hydrogen Components) was discussed as a model.

The ISO draft standard addresses 80% of container marking issues. WG2 needs to address the rest.

Other concerns include shock and vibration; abrasion; particulate containment; MSDS/Emergency Response and operating conditions (temperature and pressure).

There is no requirement to test a complete hydrogen storage system, including manifolds, etc. The scope of the item is the container and to the shutoff valve.

Recharging specifications: the manufacturer comes up with the recharge specifications procedure, not WG2.

Action items:

1. Look up the ISO definitions of "bulk storage capacity" and "cylinder standards." (Jeff Grant)
2. Devise a test of materials capability and find out what test determines this. (WG2)
3. WG2 needs to define the maximum working capacity temperature (George Thomas)
4. Develop draft standard to be submitted to ISO/TC-197 (WG2)
5. Develop expansion tests for cylinders. (WG2)
6. Create a separate group to make a standard for auto ignition testing. (Jeff Grant)
7. Pressure relief – WG2 is satisfied with the direction that CGA is heading in this category. CGA is working on pressure relief standards currently.

8. An outline for the first draft will be written by the end of March 2002 (Bill Summers)
9. A first draft standard completed by late May 2002.
10. Write the preliminary draft test requirement for DOT. (Ned Stetson)

Dr. Summers requested a conference call be held on *April 25th* to discuss progress, revisions of the draft outline, and additional comments. The final draft standard should be completed by *May 31st* and delivered to ANSI by June. (***NOTE:*** Revised plan is to present the outline and rough draft standard at U.S. TAG meeting on *May 21, 2002*.)