MINUTES OF THE AUGUST 2010 TELECONFERENCE OF THE NATIONAL HYDROGEN AND FUEL CELLS CODES & STANDARDS COORDINATING COMMITTEE

MEETING DATE: August 4, 2010
FACILITATOR: Karen Hall, NHA

1. Roll Call - Chad Blake

- Attendees (16Kb PDF)

2. Review of Anti-Trust Guidelines - Robert Wichert

Robert Wichert reminded USFCC members to be mindful of the Anti-trust guidelines.

- Antitrust Guidelines (27Kb PDF)

3. Review of/Corrections to Draft Minutes of July 2010 Teleconference Meeting

Approved as written

4. DOE/HQ Update – Antonio Ruiz

Antonio Ruiz provided an update. The DOE budget for 2011 has made it through House and Senate Appropriations Committees. The results are $137M in the House, and $174M in the Senate. The Senate has added additional language directing how the money should be spent and also increased the Market Transformation budget to $20M. Tech Val was also increased too to $20M. Education got $1M in the Senate. The Safety Program is at $9M including C&S.

There will be a workshop in China to cover tanks and vehicle tanks, including hydrogen, natural gas and hydrogen blends. This is a follow-up to the Washington, D.C. workshop held previously. China is considering banning Type-4 tanks, although they are being allowed in the upcoming Shanghai Expo. They may be completely banned after that time. The Workshop may help to provide more information to the Chinese authorities on these tanks that might help them to make a different decision. The meeting is being supported by tank and vehicle manufacturers.

There will also be an infrastructure workshop sponsored by IPHE on 21-22 September in Shanghai. Minutes will be published on line.

Jim Ohi provided some more information regarding the Workshop in China. China is expected to provide information regarding the Chinese experience with Type 4 tanks, mainly for NGVs. Quality Control and Materials issues will be discussed. Guidance from SAE J2579 will also be discussed along with harmonization and tank testing protocols.

5. Calendar of C&S Events and Fuel Cell Safety Information - Kelvin Hecht and Karen Hall

- http://www.fuelcellstandards.com/calendar_new.html
- http://www.hydrogenandfuelcellsafety.info

6. Discussion Issues

6.1 NHFCCSCC Mission Statement and Meeting Format

Robert Wichert provided the opportunity for members to provide input to the Mission Statement. The following changes were made. Members are encouraged to review these changes and discuss this again next month. Changed sections are highlighted in yellow. New text isunderlined. Removed text is shown in ~~strikeout~~.

National Hydrogen and Fuel Cell Codes and Standards Coordinating Committee (HFC4)

HFC4 Mission
The National Hydrogen and Fuel Cells Codes and Standards Coordinating Committee (HFC4) provides a forum for effective communication and collaboration between all stakeholders in the hydrogen and fuel cell~~s~~ regulations, codes, and standards community. HFC4 leadership will facilitate the development of ~~the~~ harmonized, consensus-based, codes and standards that are critical to ensure public safety and to accelerate the commercialization of new hydrogen and fuel cell technologies for stationary, transportation and portable applications.

HFC4 Strategic Objectives
HFC4 will encourage and facilitate the timely and efficient incorporation of data-based hydrogen and fuel cell safety criteria into the existing and proposed national and international codes and/or standards promulgated by:

- American Petroleum Institute (API)
- American Society of Mechanical Engineers (ASME)
- ASTM International
- Compressed Gas Association (CGA)
- CSA America / CSA International
- Institute of Electrical and Electronics Engineers, Inc. (IEEE)
- International Code Council (ICC)
- International Electrotechnical Commission (IEC)
- International Organization for Standardization (ISO)
- National Fire Protection Association (NFPA)
- National Institute of Standards and Technology (NIST)
- Society of Automotive Engineers (SAE)
- Underwriters Laboratories
- Other applicable organizations through active collaboration with ANSI
- United States Department of Transportation
- California Division of Measurement Standards (Department of Agriculture)

~~HFC4 will promote development of codes, standards and regulations~~ to facilitate technology deployment and commercialization. ~~that establish a minimum level of safety for today and also facilitate without hindering new technology development and future commercialization~~. Performance-based codes, standards and regulations will be encouraged wherever practicable.

HFC4 will also promote development of performance measuring standards that take all applicable technologies into account, without creating any advantage for one or more technologies over others except for the inherent aspects of the various technologies. HFC4 will promote performance measuring standards that compare all technologies in a similar manner without prejudice.

HFC4 will facilitate consensus based codes and standards development by working cooperatively with all stakeholders to take their viewpoints and all technologies into account.

Stakeholders: The community of stakeholders includes codes and standards developers, industry members, technology developers, codes and standards users, architects and engineers, legislative and regulatory bodies that adopt codes, standards and other regulations, safety officials, first responders, and the US Government including the USDOE, USDOT, US EPA, US DOC (particularly NIST), OMB, National Laboratories, hydrogen and fuel cell users and consumers, and others. International stakeholders shall also be taken into account where their products or services might serve the US market.

HFC4 will support and encourage technical and operational consistency among and across the codes and standards developed by different organizations. The HFC4 will provide a forum to list the differences,

understand the details, and facilitate consistency.

HFC4 will promote the harmonization of international hydrogen and fuel cell codes, standards and regulations by outreach to and collaboration with the international organizations involved in their development.

HFC4 Charter
HFC4 will convene meetings, in person and using teleconferencing, to allow the productive interaction of stakeholders to achieve these strategic objectives:

- Agendas shall be set beforehand, with input from affected stakeholders;
- Meeting minutes shall be published and accessible on the web at www.hydrogenandfuelcellsafety.info
- Action items for members and affected stakeholders will be tracked and communicated; and
- Smaller working groups may be established to complete specific items within the NHA or USFCC codes and standards committees, depending on topic and staff resources. In this case, a roster of working group members will be reported to HFC4 to facilitate discussion and input from others, and the results of the working group will be reported to the HFC4, as well as provided to the SDO/CDOs.

Wherever possible, in person meetings will be co-located with applicable meetings or conferences to minimize unnecessary travel and maximize opportunities to engage stakeholders. A calendar of upcoming meetings and conferences will be maintained atwww.hydrogenandfuelcellsafety.info and www.fuelcellstandards.com.

HFC4 will provide a forum to discuss standards, proceedings, and rulemakings that are open for input and comment as part of their drafting, review, revision, or approval cycles. Information on how to comment, when to comment, and the process for defending comments will be provided with as much advance notice as practicable. SDO/CDOs will be encouraged to provide a 90-day notice and logistic details on upcoming comment periods to facilitate industry input.

HFC4 will help establish and communicate priorities and align resources for codes and standards development, and the necessary performance and safety data generation for decision making, with the existing codes and standards development cycles. Criteria will include assessing the potential safety risks and the impact of codes and standards availability on commercialization timelines.

HFC4 will facilitate coordinating and integrating the many global activities in hydrogen codes and standards development to help ensure their consistency and the best use of resources.

HFC4 will work to help familiarize building code and fire safety professionals, local/state/Federal policymakers and other strategic stakeholders (e.g., homebuilders, architects, transportation regulators, users and consumers, etc.) with relevant hydrogen and fuel cell technical and codes and standards information.

HFC4 will support www.fuelcellstandards.com andwww.hydrogenandfuelcellsafety.info to provide up-to-date information on hydrogen and fuel cell codes and standards activities worldwide.www.fuelcellstandards.com will maintain the matrix of ongoing and completed codes, standards and regulations, with status and contact information. www.hydrogenandfuelcellsafety.info will provide minutes of the HFC4 meetings, as well as short written reports of timely safety, codes and standards activities and actions, and emphasize when documents are open for comment, new activities are formed, and opportunities to influence codes and standards are coming up.

HFC4 will identify critical gaps and deficiencies in hydrogen and fuel cell codes and standards and formulate recommendations to address them.

6.2 Fuel Cell Shipping Regulations – Robert Wichert

Robert Wichert provided an overview of shipping regulations for fuel cell cartridges, fuel cell engines, fuel cell vehicles, fuel cell systems and related items.

- Full presentation

6.3 Department of Defense Prohibition on Indoor Hydrogen Fueling – Tom Joseph
Tom Joseph provided a briefing on this topic.

- Full presentation

6.4 Fuel Quality – Jim Ohi
Jim Ohi provided an update. WG#12 is preparing the Draft International Standard for review. This should be out for country review late this year or early next year.

6.5 ASTM D03.14 – Jackie Button
Jackie Button provided an updated matrix

- Matrix

6.6 NIST – Juana Williams
Juana provided an update and draft copies of the two new documents. Her update was to tell update us on the adoption by the July 2010 National Conference on Weights and Measures of a tentative code of legal metrology requirements for commercial hydrogen gas refueling devices and permanent method of sale regulation for that application

- New Tentative Code 3.39 for Hydrogen Gas-Measuring Devices* (legal metrology requirements for trial and experimental use to address the design, accuracy, test, and operation of equipment) > http://www.usfcc.com/Prelim-2011-H2-H44-Device-Code-03AUG2010.pdf

- New Method of Sale Regulation 2.32 for Hydrogen** (definitions, symbols, and unit of measurements for equipment labeling and advertisement) > http://www.usfcc.com/Prelim-2011-H2-H130-MOS-Code-03AUG2010.pdf

She told us that the USNWG has a timeline for working through 2012 to refine and finalize the hydrogen equipment and fuel quality codes and related test procedures, while establishing training and educational outreach projects. Input on the codes is encouraged codes from all stakeholders. The code and regulation apply to hydrogen gas deliveries sold by the kilogram typically through service station dispensers for use as fuel in fuel cell and internal combustion engine vehicles. NIST will publish the tentative codes in its 2011 edition of NIST Handbook 44* "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" and NIST Handbook 130** " Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality."

6.7 Fuel Cell Fork Lifts – Aaron Harris
Aaron Harris provided an update.

Work continues on HPIT-1 covering components. WG1 is working on the entire document and WG2 is working on tanks.

UL 2267 is out for review by the Standards Technical Panel.

UL has agreed that UL 2267 can be used as a seed document for an international standard for fork lifts.

J2919 is out in draft format. Mike Steele is working on this document. If you want to contribute, please contact Mike Steele.

Indoor refueling – Julie Cairns has verified that HPIT-2 will be starting soon to cover dispensers, including indoor dispensers. The title of HPIT-2 is "Dispensing system for dispensing hydrogen gas for fork lifts".

HIPOC and NFPA-2 WG-6 are working on coordination of effort to craft language for NFPA 52 and NFPA 55 to cover dispensing, indoor dispensing and fuel cell fork lifts.

Chapter 22 IFC text that was not adopted is being considered for reference or inclusion in NFPA 55 for outdoor bulk storage.

The next meeting of the USFCC Fork Lift Task Force is August 17th at 11:00 AM EDT.

6.8 Tank Testing – Daniel Dedrick
Daniel Dedrick provided an update. Tank testing continues to test for crack propagation in cyclic hydrogen service. Both "as-manufactured" tanks and tanks with "engineered flaws" will be tested. The evaluation of crack initiation and crack propagation is being investigated. The goal is establishment of a performance based standard for fuel cell fork lift tanks. There have been no tank failures so far during testing. Currently the "as-manufactured" tanks have been subjected to approximately 15,000 cycles. The testing is slightly behind schedule. A new compressor has been obtained to help speed things up. Cycle times have been increased to almost 300 cycles per day. Results are expected soon. The tanks with "engineered flaws" are also being tested now.

"As-manufactured" – 3 tanks with approx. 15,000 cycles plus one larger tank with a different geometry.

Tanks with "Engineered flaws" – 15 tanks, 10 can be tested at a time.

Multiple defects have been added to a single tank to give additional data.

Indoor refueling – Experiments and model evaluations are in progress to validate NFPA 2 and NFPA 52 assumptions regarding geometry and leak sizes. Some sub-scale warehouse testing should start in September.

7. Codes and Standards Developing Organizations
This is the opportunity for CDO's, SDO's and Standards Panels. Committees, etc. to provide updates to the group.

7.1 ISO TC 197 – Jill Thompson / Glenn Scheffler

August 2010 Update - ANSI-Accredited U.S. TAG for ISO/TC 197, Hydrogen technologies

1. Ballots recently closed
    - N472, proposal to revise ISO/TR 15916:2004, Basic considerations for the safety of hydrogen systems The U.S. TAG voted to approve the update as a TR. The ISO ballot terminated on July 19; results of the vote have not been circulated.

    - Systematic review of ISO 16110-1:2007, Hydrogen generators using fuel processing technologies — Part 1: Safety The U.S. TAG voted to confirm. The ISO ballot terminated on June 15; results of the vote have not been circulated.

    - ISO/DIS 17268, Gaseous hydrogen land vehicle refueling connection devices. The U.S. TAG voted to disapprove. The DIS ballot was disapproved.

2. Upcoming meetings

- ISO/TC 197/WG 14, Hydrogen fuel — Product specification — Proton exchange membrane (PEM) fuel cell applications for stationary appliances. September 13-14 in Vancouver, British Columbia

- ISO/TC 197/WG 15, Gaseous hydrogen—- Cylinders and tubes for stationary storage – POSTPONED. September 15-16

- ISO/TC 197/WG 8, Hydrogen generators using water electrolysis process, and WG 11, Gaseous hydrogen — Fuelling stations September 21-22 in Tokyo

7.3 IEC TC 105 – Kelvin Hecht

August 2010 Meeting of the DOE Hydrogen Codes & Standards Coordinating Committees (DOE/NHA/USFCC)
TC105 – Fuel Cell Technologies Update - Kelvin Hecht

- WG#3 (IEC 62282-3-1, Stationary Fuel Cells-Safety)
  - Comments on CD for 2nd edition by September 17th.
- WG#9 (IEC 62282-6-200, Micro Fuel Cells –Performance)
  - Comments on CD for 2nd edition by October 15th.
- Guidelines for Working Groups to Identify Hazards
  - Vote by August 13th.
- Ad Hoc group has established a plan to develop a new standard for small fuel cells, that provide both heat and electrical power, base on the European standard EN 50465.
- A new activity to address forklifts will be proposed at the October Plenary meeting.
  - The US is vigorously supporting the use of revised UL2267 as the "seed" document.
- Plenary & Working Group meetings; October 11-15, Seattle.

7.4 US Fuel Cell Council – Robert Wichert
The USFCC Regulatory Matrix can be found at:http://www.usfcc.com/USFCC-Regulatory-Matrix-July-14-2010-Draft-01.pdf

8. Next Meeting

Wednesday, September 1, 2010 at 3:00 PM Eastern Daylight Time. This meeting will be broadcast as a Webinar. Reserve your Webinar seat now at: https://www1.gotomeeting.com/register/206935585