

MINUTES OF THE OCTOBER 2008 TELECONFERENCE OF THE NATIONAL HYDROGEN AND FUEL CELLS CODES & STANDARDS COORDINATING COMMITTEE

MEETING DATE: October 1, 2008

MEETING TIME: 3:00 – 4:30 PM (EDT)

FACILITATOR: Tony Androsky

1.0 ROLL CALL - Karen Hall

Present on the call:

Tony Androsky, U.S. Fuel Cell Council	Gary Nakarado, Regulatory Logic
Chad Blake, NREL	Nha Nguyen, NHTSA
Geoff Bromaghim, NHA	Carl Rivkin, NREL
Carla Conmy, Bloom Energy (guest)	Antonio Ruiz, DOE
Ben Deal, CARB (for Lesley Crowell)	Hank Seiff, CVEF
Kyle Gibeault, NHA	Patrick Serfass, NHA
Karen Hall, NHA	Jill Thompson, CGA
Bill Hoagland, Hoagland & Associates	Michael Thompson - SENTECH
Ken Krastins, Plug Power	Sondra Ullman, Plug Power
Paul May, NFPA	Mike Veenstra, Ford
Darren Meyers, ICC	Juana Williams, NIST
John Mough, CDFA	Andrea Zajac, Michigan DEQ

Tony Androsky facilitated the meeting.

2.0 REVIEW OF USFCC ANTITRUST GUIDELINES - Tony Androsky

USFCC members were asked by Tony Androsky to be mindful of the anti-trust guidelines, which can be found on the USFCC members' website, as well as an attachment to the minutes of past meetings.

[Antitrust Guidelines](#) (27Kb PDF)

3.0 REVIEW OF/CORRECTIONS TO DRAFT MINUTES FROM PRIOR TELECONFERENCE MEETINGS

Correct date of the meeting to read September 3. Approved as modified.

4.0 OPPORTUNITY FOR DOE/HQ REPRESENTATIVE TO PROVIDE LATEST INFORMATION ON WHAT'S GOING

ON

AT DOE - Antonio Ruiz

Antonio Ruiz provided an update. Part of the Hydrogen Program, that includes Codes and Standards, moves as of today to Vehicle Technologies. The budget is currently on a Continuing Resolution (CR). C&S had an appropriated budget of \$16M in FY08. \$12.5M is the FY09 request, so CR means we can only spend to lower amount.

Jim Ohi was at WG12 meeting in Tokyo last week. There was also a Global Technical Regulations meeting in Tokyo, which Nha Nguyen will report on later.

Some recent highlights of the DOE program include the recent permitting workshops. The most recent permitting workshop was held in Detroit in conjunction with the Codes & Standards Workshop. www.hydrogen.energy.gov/permitting has been revamped to make it more effective.

5.0 OPPORTUNITY TO DISCUSS THE CALIFORNIA HYDROGEN FUELS PROJECT'S EFFORTS TO DEVELOP A HYDROGEN STANDARD - John Mough, Gary Castro

Sept 11 CA regs went into affect. Haven't adopted methodologies yet for how to analyse – means regs can not be enforced. ASTM has a couple items out for ballot – if approved may be adopted in December or later.

6.0 REPORT ON HYDROGEN INDUSTRY PANEL ON CODES (HIPOC) ACTIVITIES - Darren Myers, Patrick Serfass

ICC FINAL ACTION HEARINGS, MINNEAPOLIS, MN – RESULTS AFFECTING HYDROGEN TECHNOLOGY

While the ICC Final Action Hearings for the 2007/08 Code Development Cycle continued through September 23rd, 2008, most of the actions affect hydrogen technology in the forthcoming 2009 editions of the International Fire Code (IFC) and International Building Code (IBC) were resolved Friday morning, September 19th.

Marty Gresho, Fire Protection Programs for Sandia National Laboratory, Livermore, CA – and Chair of NFPA 2, and Patrick Serfass, Director of Technology and Communications for the National Hydrogen Association represented the Hydrogen Industry Panel on Codes (HIPOC) on hydrogen issues from the hearing room floor September 16th - 19th, at the Minneapolis Convention Center, Minneapolis, Minnesota.

"A big thanks to both of you for representing HIPOC and the Hydrogen Industry at the hearings this week," said HIPOC Chair, Tom Joseph, who could not make the hearings due to other business challenges, but responded to the good news nonetheless.

There were thirteen (13) final actions identified by HIPOC as relevant to the hydrogen and fuel cell community: Eleven (11) affecting the 2009 IFC, One (1) affecting the 2009 IBC and One (1) affecting the 2009 International Fuel Gas Code (IFGC):

Affecting the ICC 2009 International Building Code (IBC):

G28-07/08, As Modified by Public Comment 1. Adoption of the public comment assures that canopy top storage/use of hazardous materials (including hydrogen) is to be classified as outdoor storage/use and not as a Group H occupancy classification.

Affecting the ICC 2009 International Fire Code (IFC):

F78-07/08, As Modified by Public Comment 1. Adoption of the public comment allows the fuel for backup power supplies, inclusive of stationary fuel cell power plants, to be located on the utility easement. However, it would limit the fuel to only that necessary for equipment servicing public utilities as subject to the authority having jurisdiction.

F231-07/08, Disapproved by consent agenda (no public comment). An attempt to clarify reference in the IFC to Ch. 30, 32 and NFPA 55.

F232-07/08, Disapproved by consent agenda (no public comment). Delete outdoor public assembly setback from T2209.3.1. Disapproved. IFC CDC agreed that they couldn't define separations to "public assembly," yet.

F233-07/08, Part I, As Submitted by consent agenda (no public comment). Adds reference to DIN EN 1081-2004 standard for the construction of vehicle fueling pads to dissipate static electricity built up on the vehicle before the driver's door is opened.

F233-07/08, Part II, As Submitted. Retains consistency between building and fire code requirements to dissipate static electricity built up on the vehicle before the driver's door is opened by adding reference to the DIN EN 1081-2004 standard for the construction of vehicle fueling pads.

F234-07/08, Public comment Withdrawn by Proponent. Therefore, final action defaults to Disapproved by consent agenda (no public comment). Indoor hydrogen fuel dispensing. There is still need for clarification beyond what the International Fire Code Development Committee and HIPOC were able to undertake with modifications. This proposal will be revisited by the HIPOC for the 2009/10 Code Development Cycle.

F235-07/08, As Submitted by consent agenda (no public comment). Adds reference to UL2075-2007 Standard for gas/vapor detection as required for in lubrication or chassis repair areas of repair garages used for repairing hydrogen and non-odorized LNG-fueled vehicles.

F261-07/08, F261-07/08 Withdrawn by Proponent. Intended to include the term "bulk" which was not included in the references to standards CGA P-18 and NFPA 55 which could be viewed as a potential conflict between the IFC, CGA and NFPA 55.

F282-07/08, F282-07/08 As Modified by Public Comment 1. Deletes Exception 4 accompanied by additional text to Section 3501.1, Scope, intending that the more specific requirements of Chapter 22 (Section 2209) apply along with relevant Chapter 35 requirements not addressed in Chapter 22. Adds language to Exception 3 which clarifies that Chapter 35 is to be applied to GH2 systems regulated by the IFGC. Adoption of the public comment clarifies that NFPA 55 applies to "bulk" GH2 and LH2 systems.

F286-07/08, Withdrawn by Proponent. Had proposed modifications to existing Table 3504.2.1 to add new "bulk" flammable gas storage volumes and setbacks to address the perceived disparity in the Table 2209.3.1 exposures for hydrogen motor fuel-dispensing and generation and other GH2 systems covered by Chapter 35.

F287-07/08, As Submitted by consent agenda (no public comment). Affects weather protection for flammable gas storage. As written the code would capture any structure providing weather protection including the storage modules used stationary fuel cell power plants using hydrogen. The 2009 IFC will clarify that the weather protection requirements do not include Note 'a' to Table 3504.2.1

Affecting the ICC 2009 International Fuel Gas Code (IFGC):

FG49-07/08, As Submitted by consent agenda (no public comment). Stationary fuel cell power plants not exceeding 10MW are to be installed in accordance with the manufacturer's instructions, NFPA 853, and the IBC and IFC.

The 2009/10 Code Development Cycle leading to the publication of the 2012 Editions of the ICC International Codes will commence with the March 24th, 2009 deadline for code change submittals. The 2009 Code Development Public Hearings will be held October 24–October 31, 2009 at the Hilton Baltimore, Baltimore, Maryland.

The HIPOC holds regular, open conference calls intended to provide informal forums on topics intended to harmonize hydrogen technology requirements between the ICC, CHIC and NFPA. As a result, interested parties may request that the HIPOC vet or represent their issue as the proponent of such change. The next HIPOC public meeting, to discuss the development of a separation distances to the IFC and affecting hydrogen fueling stations will take place Thursday, October 9th, 12:00 – 13:00 ET. For minutes, the HIPOC Charter, or more information, please visit the HIPOC web page:<http://www.hydrogenandfuelcellsafety.info/hipoc/>

For more information on International Code Development, visit: <http://www.iccsafe.org/news/pdf/factsheet.pdf>

For more information on the 2007/08 and 2009/10 code development cycles, visit: <http://www.iccsafe.org/cs/codes/>

It is worth noting some of these code changes, such as static discharge fueling pads, were three years in the making. Following the ICC Final Action Hearings, the 2009/2010 cycle begins – HIPOC will be submitting a separation distances proposal harmonized with NFPA based on the Sandia work. HIPOC will hold a telecon on Oct 9 noon-1pm Eastern. In addition, HIPOC will hold an in-person meeting at the 2008 Fuel Cell Seminar – Sheraton Phoenix Hotel. Oct 29 (afternoon) & 30 (morning).

7.0 REPORT ON NFPA ACTIVITIES - Paul May

Paul May reported NFPA 2 still on schedule for 2010 revision cycle. A detailed Table of Contents (TOC) is expected to be released to the public. This gives the Technical Committee time to flesh out details while public can propose requirements.

8.0 REPORT ON THE DOE/NREL/NASFM/NHA/USFCC “HFS AND FUEL-CELLS-FOR-BACKUP-POWER FOR TELECOMMUNICATIONS PERMITTING” WORKSHOP - Carl Rivkin

The latest HFS Permitting Workshop was held in Detroit, MI on September 16 and 17. It provided a unique opportunity for AHJs in Michigan to become familiar with the new Michigan rules. Andrea Zajac guided the regulations and identified jurisdictions and invited representatives from the appropriate Michigan offices. This workshop was different from the previous workshops, as it covered the Michigan regulations solely. There was lots of interchange and feedback – very productive. Participants felt it helped reinforce procedures for permitting these installations in Michigan. NextEnergy provided the facility and it worked out well. Andre agreed and noted there were lots of calls about the systems – and the workshop raised the awareness for hydrogen systems.

Carl reported there would be more of these workshops in the next fiscal year. Interested parties are asked to let Carl Rivkin know if you have a jurisdiction in need of these.

Antonio Ruiz noted he, too, has received positive feedback. The Permitting Workshops are well-received. There is interest in trying to reach out faster and go deeper into the country. Therefore DOE is looking to modify the plan – maybe more workshops – this fiscal year and possibly beyond. The workshops may expand to include other technologies.

Karen Hall and Tony Androsky added that the members of the USFCC and NHA continue to speak favourably of the workshops. Industry has found this activity very valuable. In addition, both organizations have seen a push for getting good baseline safety standards for indoor applications coming from the industrial members.

9.0 REPORT ON IEC/TC105 ACTIVITIES AND DOCUMENTS IN THE “COMMENTS” STAGE

Kelvin Hecht sent apologies for the meeting. An update on this activity is expected in November. www.fuelcellstandards.com

October Calendar

14-15 IEC 62282-3-2
16-17 IEC 62282-5-1
20 ISO TC22/SC21 WG2
20-22 ISO TC22/SC21 WG1
22 ISO TC22/SC21 Plenary
27-31 Fuel Cell Seminar

10.0 REPORT ON ISO/TC197 ACTIVITIES AND DOCUMENTS IN THE “COMMENTS” STAGE - Jill

Thompson

- **Currently out for vote**
 - **ISO/FDIS 16111**, *Transportable gas storage devices-Hydrogen absorbed in reversible metal hydride*

U.S. TAG comments are due by 3 October 2008.

A webconference to review comments is scheduled for 8 October 2008.

The ballot concludes 22 October 2008.

- **ISO/DIS 26142**, *Hydrogen detector*

U.S. TAG comments are due by 9 January 2009.

A webconference to review comments is scheduled for 20 January 2009 from 2:00-4:00 PM.

The ballot concludes 15 February 2009.

- **Recently closed votes**
 - **ISO/DIS 16110-2**, *Hydrogen generators using fuel processing technologies—Part 2: Procedures to determine efficiencies*

The ballot concluded 11 September 2008.

The U.S. TAG voted disapproved with comments. Have not heard from ISO or ANSI on final results.

- **ISO/DIS 15869.3**, *Gaseous hydrogen and hydrogen blends—Land vehicle fuel tank*

The ballot concluded 26 August 2008

The DIS ballot failed.

The Secretary for ISO/TC 197 has reported that a technical specification will be published for use until an International Standard is available.

- **Upcoming WG 8 & 11 Meetings**
 - Meetings scheduled for 6 (WG8) and 7 (WG11) November in The Hague. WG 11 will also have a Task Group meeting on the 5th. WG 11 will be addressing setback distances and dispenser protections.

Following her report, Jill was asked whether SAE and ISO will work together on refuelling stations. Jill agreed to try to get an answer.

11.0 OPPORTUNITY FOR CDOs AND SDOs TO REPORT ON THEIR ACTIVITIES

a. Report on NIST activities – Juana Williams

Workshop

On September 23-25, 2008, NIST WMD held a Workshop on Commercial Hydrogen Measurement for weights and measures administrators at its Gaithersburg, Maryland campus. The workshop was made possible

through DOE and NIST funding. The workshop participants were weights and measures officials, who are responsible for field inspection and test of motor-fuel dispensers and who are part of the legal metrology standards developing process.

Nineteen participants representing 8 of the 18 states that have hydrogen refueling equipment were present. Presenters from Air Products and Chemicals, Inc., General Motors (GM), the National Hydrogen Association, and NIST covered topics from hydrogen production to vehicle technology. The workshop included tours of the hydrogen refueling operation at the Shell Benning Road station in Washington, D.C. and the Equinox, GM's fuel cell vehicle.

The September session begins a series of workshops that will provide regulatory officials and the service industry with the latest developments in the operation, performance, safety, and legal metrology requirements for hydrogen refueling equipment.

Next Work Group Meeting

The U.S. National Work Group (USNWG) for the Development of Commercial Hydrogen Measurement Standards is scheduled to meet December 2-4, 2008 at MicroMotion in Boulder, Colorado. A summary of the work from the August 2008 meeting and a November agenda will be distributed shortly and posted to the web site <http://ts.nist.gov/WeightsAndMeasures/Developing-Commercial-Hydrogen-Measurement-Standards.cfm>.

On September 12, 2008, Diane Lee (NIST WMD) requested input from the hydrogen and weights and measures communities on test procedures and equipment that is currently in use to verify the performance of hydrogen refueling equipment. This is just a reminder that the deadline for providing that information to Diane Lee is October 14, 2008. Comments can be sent to diane.lee@nist.gov.

National Standards Development

The USNWG submitted proposals to the 2009 National Conference on Weights and Measures Specifications and Tolerances and Laws and Regulations Committees to include items on both Committees' Developing Items Agendas. The proposals are intended to make the weights and measures community aware of upcoming changes to NIST Handbook 44 and NIST Handbook 130 to address legal metrology requirements for hydrogen refueling applications. The proposals are also meant to encourage the communities input on the requirements and their participation in the standards and test procedures development process.

b. Report on CSA America Activities – Julie Cairns

CSA meetings are happening now in Houston. Report anticipated next month.

c. Report on SAE Activities – Mike Steele

Mike Steele provided an update. The SAE Fuel Cell Working Groups are meeting on Nov 18, 19, 20, 21
18th Safety Working Group J2578
19th J2579
20th, 21st Interface Working Group – international group – ISO 17268
review – want to have joint meeting to keep these work items from

diverging

d. Others? - none

12.0 REPORT ON GLOBAL TECHNICAL REGULATIONS - Nha Nguyen

A meeting on the Global Technical Regulations (GTRs) was held last week in Japan – 4th mtg – went well. The GTR will sets requirements for hydrogen FCVs – fuel system integrity, storage system container, electrical safety for high voltage.

The meeting last week was focused on fuel system integrity. Post-crash leakage limit based on current requirement for gasoline vehicle.

Jan 09 next meeting in Budapest, Hungary. The container testing from SAE, NHTSA, and Transport Canada will hopefully be available for discussion.

The electrical safety subgroup met in July – proposal submitted for group consideration. Next meeting November week of 10th 2008 in Paris.

The GTR is scheduled for completion by the end of 2010.

Meeting materials will be posted on unece website. Here are the links to the hydrogen powered vehicle global technical regulation (GTR), Safety subgroup and Electrical Safety subgroup:

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/sgs_4.html

http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/elsa_3.html

13.0 REPORT ON NEXTENERGY C&S CONFERENCE - Carl Rivkin

Carl Rivkin reported the 2008 NextEnergy Codes & Standards Conference went very well. In addition to updates on various national code and standard development efforts, there were three panel discussions. The panel on indoor refuelling drew a great deal of interest. It dealt with residential fuelling, which may be an active area in need of additional work.

Mike Veenstra added the comment suggesting we think of indoor fueling not just as residential – could be fork lifts or other operations. Carl noted NFPA 52 will have indoor fueling requirements in the next revision – while residential indoor refuelling is not yet well addressed.

14.0 REPORT ON HYSAFE MEETINGS HELD IN GERMANY - Karen Hall

Karen Hall reported she has recently been appointed as an industry advisor for HySafe, and attended the open meetings, advisors meetings, and HyPer meetings during the week. Key issues identified include the following:

- HySafe is scheduled to end in February 2009. Activities are

underway to complete efforts and get documents published.

- Several activities are behind schedule.
- The effort to publish a hydrogen installation guideline for Europe is moving ahead. A rough draft was provided for a select review team. In addition to information contained in similar guides from the US and other sources (DOE/PNNL permitting guides, IEC/TC 105 guidelines, UK installation guide, NFPA, etc) there is a great deal of information that is specific to Europe, including some basic information on the CE mark and European regulations. There is also a lot of data developed under this project to help address set-back distances, flame speed, etc. This draft is being reorganized and updated to reflect feedback from the Karlsruhe meetings. Release for public review is scheduled for November.

As there are many documents to maintain and work upon which to build, the member partners of HySafe are in the process of setting up an association of hydrogen safety to continue after HySafe is ended. They are struggling with the basics right now, including name, funding, scope, etc. The organizers have agreed to share information with the NHA for consideration for inclusion in future editions of the *Hydrogen and Fuel Cell Safety Report*.

15.0 OPEN DISCUSSION AND OTHER ISSUES

a. Joint Hydrogen Quality Task Force - Jim Ohi

Not present – next month

b. Hydrogen vehicle shipping regulations work - Tony Androsky

Deferred till next month

c. 2009 Codes & Standards Priorities - Tony Androsky, Karen Hall

Karen Hall noted it is the time of year when the NHA and USFCC develop C&S priorities for 2009. She indicated the NHA is polling members of the NHA's C&S Steering Committee, and wanted to offer the NHFCCSCC participants an opportunity to identify codes and standards development needs and priorities. The following were suggested:

1. indoor refueling
2. other indoor operations
3. confined spaces – vehicles – parking, tunnels, etc

Outreach needs and priorities included more HFS permitting workshops R&D needs and priorities to support codes and standards development activities may be required to support the above priorities. Karen agreed to share results of the member poll during the November telecom.

Sondra Ullman noted the USFCC continues to maintain their C&S priorities matrix. Tony Androsky agreed to send most current version for inclusion for the agenda for November's call.

d. Retrospective Analysis of HFCCSCC

- Is it operating the way we think it should?
- Proposals for modifications?

16.0 NEXT MEETING

- Teleconference Meeting on November 5th.
- ISO WG meetings in The Hague – Karen will try to arrange for regular participants to take part if possible. CGA is not available on the 5th.
- Despite a handful of schedule conflicts – 5th ok and confirmed