MINUTES OF THE DECEMBER 2007 TELECONFERENCE OF THE NATIONAL HYDROGEN AND FUEL CELLS CODES & STANDARDS COORDINATING COMMITTEE

MEETING DATE: December 12, 2007
MEETING TIME: 1:00 – 2:30 PM (MST)
FACILITATOR: Sondra Ullman (Plug Power)

1.0 Introductory Remarks

Russ began the meeting by welcoming everyone and doing the roll call.The Coordinating Committee is a collaborative activity of DOE, the National Hydrogen Association (NHA), the US Fuel Cell Council (USFCC) and NREL.

The listing of teleconference meeting participants is provided inAttachment A.

2.0 Reviewed Anti-Trust Guidelines

USFCC members were asked by Sondra Ullman to be mindful of the anti-trust guidelines, which can be found on the USFCC members' website, as well as attached to the minutes of past meetings.

Antitrust Guidelines (27Kb PDF)

3.0 Reviewed and approved the minutes of the previous teleconference meeting

The draft Minutes of the November 7th teleconference meeting were approved without additions or corrections. They will become "final" and submitted for posting on the NHA Hydrogen Safety Report website.

4.0 Opportunity for DOE/HQ Representative to Provide Latest Information on What's Going on at DOE

Antonio Ruiz, manager of the DOE Safety and Codes and Standards Subprogram could not make the call. Jim Ohi provided an update. Jim pointed out that the current continuing resolution expires on December 18th, and another continuing resolution is expected to carry us into next year. It is very difficult to predict the eventual outcome of the budget discussions in Congress.

5.0 Discussion: New York City's Revision of its Codes and Impact on Hydrogen and Fuel Cell Technologies

In November's teleconference meeting, Sondra Ullman informed us that New York City is in the process of revising their building, fire, mechanical and other construction codes based on the 2003 ICC codes. Some of the changes to the codes relate to hydrogen and fuel cells. The new codes go into effect July 2008.

There is proposed language in the mechanical code that has negative implications with respect to use of fuel cells for stationary applications (e.g., mandating that only natural gas can be used and banning onsite hydrogen storage).

In addition, in the revised fire code (which is based on the 2003 edition of the IFC), references to hydrogen motor vehicle fueling stations have been deleted entirely. Chapter 2209 has been "reserved" instead of being used for hydrogen vehicle fueling as is done in the IFC. In addition, CNG vehicles are provided for, but hydrogen vehicles are not.

The action item as a result of Sondra's briefing at November's meeting was for the Committee to convene a teleconference meeting involving interested members to: (1) learn as much as possible regarding what the City is doing in its codes with respect to hydrogen and fuel cells; and (2) decide on actions (if any) to take. The teleconference meeting was held on November 19th.

In December's meeting, Sondra Ullman led the discussion regarding the teleconference meeting and possible next steps – by the Committee or individual parties. Comments regarding the new codes are due on December 28, 2007. There will be a public meeting on December 20th in Brooklyn.

There was a lot of discussion by Committee members regarding their perceptions of what the City was trying to do vis-à-vis hydrogen and fuel cells.

Some other examples of proposed language in the codes that affected hydrogen adversely include:

1. Deletion of all requirements that allow refueling of hydrogen vehicles after they have been repaired in a repair facility

2. Filling of containers with flammable gases in general and hydrogen in particular is not allowed

3. Deletion of the entire chapter (in the IFC) on fueling hydrogen vehicles.

It was pointed out that the State of New York, which has code responsibilities for the rest of the state, has no influence over the New York City Fire Code.

Brad Smith (Shell Hydrogen) remarked that Shell (with an automotive partner) might consider constructing a HFS project in the City. Given the current language in the codes, a project could go forward but it would have to be done by requesting code variances. That would, of course, increase the time to implement a project.

The Committee was wondering if the city had "problems" with hydrogen and/or current hydrogen-related safety requirements in the ICC documents, or was planning a separate effort to address hydrogen in its own manner.

The discussion led to several action items:

1. Darren Meyers was asked to attempt to get (non proprietary) information from the ICC's Government Relations Office regarding what the City is doing or plans to do regarding hydrogen and report back

2. NHA and USFCC were encouraged to submit comments regarding the codes and offer to help the City develop hydrogen and fuel cell-related code language and possibly re-instate the language in the IFC in the City's code

3. Members of NHA and USFCC were asked to send comments regarding the codes to Karen Hall and Robert Wichert. Karen would use the comments to generate bullet points to be submitted to the City before the closing date for comments. Furthermore, the comments were to be documented in a "logo letter" and sent to the NHA and USFCC membership for their consideration

4. Jim Ohi will contact the New York City Battalion Chief who attended the"Hydrogen HFS Permitting Workshop" held on July 10, 2007 in Atlanta to get information regarding what the City is doing or plan to do regarding hydrogen

5. Karen Hall will contact Tamara Saakian (who has been involved in the City's code development efforts) to get information regarding the City's plans vis-à-vis hydrogen.

The website for the press release regarding the City's efforts is given below:http://www.nyc.gov/html/fdny/html/pr/2007/120507_9107.shtml

The website providing the actual fire code is given below:http://www.nyc.gov/html/fdny/html/firecode/index.shtml

The discussion regarding New York City's efforts will continue in January's meeting.

6.0 Report on California Hydrogen Fuels Project's Efforts to Develop a California-Specific Hydrogen Fuel Quality Standard

John Mough (California Department of Food and Agriculture/Division of Measurement Standards (DMS)), provided an update on California's efforts to have the hydrogen fuel quality regulation in place by January 1, 2008 as mandated by the state legislature.

The proposed regulation has been published by the California Office of Administrative Law and is out for the 45-day comments period. It is posted on the following website:
www.cdfa.ca.gov/dms/hydrogenfuel/HydrogenFuelRegulations.pdf

The public comment period ends on Monday, December 17th, 2007. Also on the 17th, there will be a public hearing on the regulation from 13:00 to 17:00 in Sacramento.

7.0 Report on the California Fuels Project's Efforts to Develop a California-Specific Hydrogen Fuel Dispenser Standard

Norm Ingram gave an update on California's efforts to develop its own hydrogen fuel dispenser standard. The meeting of the NIST National Working Group (in which DMS is a participant) resulted in a review of several code sections. The next meeting of in the Working Group will be March 4-6, 2008 at the California Fuel Cell Partnership.

One of the issues that arose during Norm's reporting was whether or not DMS was participating on the CSA technical committee developing**HGV-4.1 (Draft Standard for HGV Dispensing Systems)**. The answer was "No".

Then, there's the related issue of DMS's potential involvement in related draft standards, such as **HGV-4.2**, **HGV-4.3** and **HGV-4.4**.

Juana Williams noted that DMS is focusing on hydrogen dispensing equipment specifications and design requirements, whereas CSA is focusing on safety issues and that there are no duplications or conflicts in the DMS/NIST efforts and those of CSA.

The "action item" was for Russ Hewett to contact Julie Cairnes at CSA regarding getting DMS involved in the work of the technical committees developing the **HGV4** Series of draft standards.

8.0 Report on Hydrogen Industry Panel on Codes (HIPOC) Activities

Darren Meyers reported on HIPOC activities. Meetings had been suspended since August, but HIPOC is now gearing up to address code change proposals as part of the ICC 2007/2008 code development cycle and Report on Proposals for **NFPA 52** and **NFPA 55**. The next HIPOC meeting will be Tuesday, January 8, 2008.

The ICC **Monograph** has been published that lists all proposed changes to the I-Codes.

There are 10 hydrogen-related proposals to be considered in the 2007/2008 ICC code development cycle – 9 for the **IFC** and one for the **IBC**. They are as follows:

1. G28-07/08, Affecting canopies used to shelter dispensing operations not as Group H (**IBC**)
2. F100-07/08, Affecting Supervision of detectors in VRLA battery cabinets (**IFC**)
3. F231-07/08, To clarify reference to Ch. 30, 32 and NFPA 55 (**IFC**)
4. F232-07/08, To delete outdoor public assembly setback from T2209.3.1 (**IFC**)

5. F233-07/08, To add reference to DIN EN 1081-2004 for ESD (**IFC**)

6. F234-07/08, Adding provisions for indoor fast-fill hydrogen fuel dispensing (**IFC**)

7. F235-07/08, To add reference to UL2075-2007, Standard for gas/vapor detection (**IFC**)

8. F261-07/08, Proposes a definition of "bulk" hydrogen storage and NFPA 55 (**IFC**)

9. F282-07/08, To clarify references for "bulk" flammable gas storage vs. H2 motor fuel-dispensing operations (**IFC**)

10. F286-07/08, To add a new "bulk" flammable gas storage and setback table (**IFC**)

The link to the 2007/2008 Proposed Changes to the International Codes in a searchable PDF format is:

http://www.iccsafe.org/cs/codes/2007-08cycle/ProposedChanges/index.html

For **NFPA 52**, 259 proposals have been submitted. For **NFPA 55**, 133 proposals have been submitted.

9.0 Report on NFPA Activities

Carl Rivkin 2 reported on NFPA activities. **NFPA 52** and **NFPA 55** are in their revision cycles. As mentioned above, NFPA has received many proposals. The formal **Report on Proposals** for both documents are scheduled to be published on December 21st.

During the period December 21st – February 29th, the proposals will be open for public comment. New requirements incorporated into**NFPA 52** and **55** will also be incorporated into **NFPA 2**.

NFPA 2 (Hydrogen Technology Code) is on the 2009 revision cycle. The goal is publishing it no later than July 30, 2010. The full technical committee for **NFPA 2** will have its next meetings on February 12-13, 2008 at NREL.

Carl Rivkin's report (42Kb PDF)

10.0 Report On IEC/TC105 Activities and Documents in the "Comments" Stage

Kelvin Hecht reported on IEC/TC105 activities in November, focusing on the activities of working groups and documents published or in the "comments" process. In addition, he reported on November statistics on the hydrogen and fuel cells codes and standards documents website – the website being: www.fuelcellstandards.com

Kelvin Hecht's report (111Kb PDF)

11.0 Report on ISO/TC197 Activities and Documents in the "Comments" Stage

Debbie Angerman reported on October activities of the US TAG to ISO/TC197.

Debbie Angerman's report (88Kb PDF)

Of special significance, while the US TAG vote was to disapprove**ISO/DTS 20012, Gaseous hydrogen—Fuelling stations**, the draft technical specification was approved in the international vote (75% approval

with 12 of 16 countries approving). This work item will now be focused towards an international standard. It is important that U.S. interested parties participate.

11.1 Report on ISO/TC197 Plenary Meeting
Karen Hall gave a report on the ISO/TC197 plenary meeting held in Montecatini Terme, Italy on November 8, 2007. Twelve countries were represented, along with TC 22 and TC 22/ SC25. Glenn Scheffler provided excellent support for the US position. Global Technical Regulation (GTR) positions were discussed. The US representative agency seems to be ANSI, which could include SAE and others. This might pave the way for SAE work to be used as the basis for GTRs. Jim Ohi presented the US Roadmap. Other countries provided their roadmaps. Jim Ohi provided the hydrogen components update. WG 9 has issued their document.

Karen Hall's report (74Kb PDF)

11.2 Report on ISO/TC197 WG12 (Hydrogen Fuel – Product Specification) Meeting
Jim Ohi reported on the WG 12 meeting held on November 6-7 in advance of the Plenary Meeting.

Technical Specification **TS 14687-2 (Hydrogen fuel - Product specification – Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles)** has been approved and is expected to be published in January 2008. It is hoped that the Committee Draft for the International Standard (IS) will be available within one year. Making this timeline will be difficult since sufficient data may not be available. The testing protocol and the matrix of who will do what testing was discussed. The initial Round-Robin was completed. A test data reporting format was also discussed. The essential data items were discussed.

Comments are expected by January. An international workshop on fuel quality is being planned for the Fall of 2008. IEC/TC 105 on Single Cell Testing will also be consulted and harmonized. The next meeting is expected in April in San Francisco. Japanese agreement has been obtained on the 300ppm limit for helium. Consequently, the level of allowed inerts is harmonized in **TS 14687-2** and **SAE 2719**. An analytic methodology is being developed. ASTM is taking the lead on this. Data from the Japan Gas Association on PSA performance have been obtained regarding breakthrough and the possibility of using CO as a control key (bellwether). One key outcome was the agreement on a common data format.

Resolutions adopted at the WG12 meeting (100Kb PDF)

12.0 Opportunity for CDOs and SDOs to Report on Their Activities

12.1 National Institute of Standards Technology (NIST)
Juana Williams reported on NIST activities. She gave a preview of the next meeting of the US National Working Group (USNWG) which will be held March 4-6, 2008 at the California Fuel Cell Partnership in West Sacramento, CA. Fuel quality effects on dispenser accuracy will be discussed. Fuel quality effects on price will also be addressed. There is a tentative schedule for US Working Group meetings for May and August of 2008. The US weights and measures community will also be consulted at two-day sessions with the sites to be determined later. June and September are being discussed as tentative planning dates for those meetings.

Juana Williams' report (65Kb PDF)

12.2 Society of Automotive Engineers
Mike Steele provided an update on SAE work. **TIR J2579 (Technical Information Report for Hazardous Fluid Systems in Fuel Cell Vehicles)** is currently undergoing a vote which closes on December 18th, 2007. Passage is expected.

Voting on **TIR J2719 (Information Report on the Development of A Hydrogen Quality Guideline for Fuel Cell Vehicles)** will be initiated in January for a 28-day balloting period. Passage will harmonize the document with ISO **TS 14687-2**.

J2600 (Compressed Hydrogen Surface Vehicle Refueling Connection Devices) is on a schedule to be updated in 2008. This will include refueling nozzle receptacle geometries.

12.3 Underwriters Laboratories
Harry Jones provided an update on **UL2266 (Standard for Electromagnetic Compatibility, Electrical Safety and Physical Protection of Fuel Cell Power Systems for Use with Commercial Network Telecommunications Equipment)**. This standard would set supplemental safety and reliability requirements for fuel cells for unique needs of the telecommunications industry.

The vote on the document was negative. Revisions are in progress to take account for the comments received. This will take a few months.

12.4 United Nations Activities
Robert Wichert provided an update on some issues related to transportation of fuel cell vehicles as freight or cargo. This is likely to be discussed at the United Nations and at the International Civil Aviation Organization (ICAO) next year, along with other modes such as sea, road and rail.

Anyone interested in this topic should contact Robert Wichert at:wichert@fuelcells.com

13.0 Other Issues

The Agenda included the opportunity for NHA and USFCC to give briefings on the presentations regarding ***codes and standards priorities*** that they gave as part of the October In-Person meeting of the Committee held in San Antonio. Unfortunately, because of the time devoted to the issues documented above, time was not available
for the "codes and standards priorities" reports.

This item will be on the agenda again for January's meeting.

14.0 Next Meeting

The next meeting will be a teleconference meeting as follows:

DATE: January 9th
TIME: 3:00 – 4:30 pm EST

ATTACHMENT A: PARTICIPANTS IN THE DECEMBER 2007 TELECONFERENCE MEETING OF THE NATIONAL HYDROGEN AND FUEL CELLS CODES & STANDARDS COORDINATING COMMITTEE

NAME	ORGANIZATION	PRESENT AT MEETING (Yes/No)
Andrea Zajac	Michigan Department of Environmental Quality	Yes
Andrei Tchouvelev	A.V. Tchouvelev & Asociates, Inc.	
Anna Stukas	Angstrom Power	
Antonio Ruiz	USDOE/Hydrogen, Fuel Cell and	

	Infrastructure Technologies Program	
Bill Chernicoff	USDOT/Research and Innovative Technologies Administration (RITA)	
Bill Collins	UTC Fuel Cells	
Bill Hoagland	Hoagland and Associates	
Brad Smith	Shell Hydrogen	Yes
Carl Rivkin	National Fire Protection Association (NFPA)	Yes
Carolyn Elam	DOE Golden Field Office	
Cathy Gregoire-Padro	Los Alamos National Laboratory (LANL)	
Chris Sloane	General Motors	
Christopher Moen	Sandia National Laboratories/Livermore	
Dan Casey	ChevronTexaco	Yes
Darren Meyers	International Code Council (ICC)	
David McClosky	USDOC/NIST	
Debbie Angerman	Compressed Gas Association (CGA)	Yes
Doug Horne	Clean Vehicle Education Foundation	
Gary Nakarada	Regulatory Logic	Yes
Glen Schleffler	Consultant to NREL	
Greg Milewski	Shell Oil Products	
Hank Seiff	Clean Vehicle Education Foundation	
Holly Thomas	NREL	
Jesse Schneider	DaimlerChrysler	
Jim Martin	Shell Hydrogen	
Jim McGetrick	BP	
John Koehr	American Society of Mechanical Engineers (ASME)	
John Mough	California Division of Measurement Standards	Yes

Jonathan Muntez	U.S. DOE	
Jonathan Otero	BP	Yes
Juana Williams	NIST	Yes
Julie Cairns	CSA America	
Karen Hall	National Hydrogen Association (NHA)	Yes
Kelvin Hecht	ANSI, IEC and Consultant to NREL	Yes
Ken Krastins	Plug Power	Yes
Kyle Gibeault	National Hydrogen Association (NHA)	Yes
Larry Moulthrop	Proton Energy Systems	
Laurie Florence	Underwriter Laboratories	
Lesley Crowell	California Air Resources Board	
Mark Richards	Versa Power Systems	
Michael Sprague	Enersol, Inc.	
Michael Steele	General Motors Advanced Technology Vehicles	Yes
Nha Nguyen	NHTSA/Office of International Policy and Harmonization	
Patrick Flynn	Enersol, Inc.	
Patrick Serfass	National Hydrogen Association (NHA)	
Paul Bouchard	Energy Conversion Devices	
Paul Buehler	Plug Power, Inc.	Yes
Prentiss Searles	American Petroleum Institute (API)	
Robert Wichert	US Fuel Cell Council (USFCC)	Yes
Rhoads Stephenson	Motor Vehicle Fire Research Institute	Yes
Roger Smith	Compressed Gas Association (CGA)	
Ron Coiner	CSA America	
Sam Sprik	National Renewable Energy	

	Laboratory (NREL)	
Samuel Lam	British Columbia Ministry of Transportation	
Sheral Arbuckle	Ford Motor Company	
Sondra Ullman	Plug Power	Yes
Terry Conrad	Concurrent Technologies Corp.	
Thad Adams	Savannah River National Laboratory	
Tom Joseph	Air Products and Chemicals	
Tony Androsky	US Fuel Cell Council (USFCC)	Yes
Jim Ohi	National Renewable Energy Laboratory (NREL)	Yes
Russ Hewett	National Renewable Energy Laboratory	Yes

Guest Participants

1. Norm Ingram (California Department of Food and Agriculture/Division of Measurement Standards)
2. Harry Jones (Underwriter Laboratories) – subbing for Laurie Florence
3. Mark Williams (DOE/HQ)