

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

MEETING DATE: January 9, 2008

MEETING TIME: 1:00 – 2:30 PM (MST)

FACILITATOR: Karen Hall (National Hydrogen Association)

1.0 MEETING PARTICIPANTS

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.

Jim Ohi announced his retirement from NREL that was effective January 4th. However, he will continue working for NREL in the Safety Codes and Standards Subprogram via a Consulting Agreement. Jim desires to decrease his workload by about 50%.

The listing of teleconference meeting participants is provided in [Attachment A](#).

2.0 REVIEW OF USFCC ANTITRUST GUIDELINES

USFCC members were asked by Robert Wichert 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 REVIEW OF/CORRECTIONS TO DRAFT MINUTES FROM PRIOR TELECONFERENCE MEETINGS

The draft Minutes of the December 12th 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 was participating in the Hydrogen Codes and Standards Tech Team meetings being held at Sandia, but called in to give a report (together with Jim Ohi). Antonio reported that President Bush signed the omnibus budget bill passed by the Congress that provided the FY08 funding for the Hydrogen, Fuel Cell and Infrastructure Technologies Program in general and the Safety, Codes and Standards Subprogram in particular. The Subprogram had requested and received \$16.0 million for FY08. An especially good feature in FY08 is the handling of Congressional earmarks – they are being funded separately and via additional funding. Now that he has his budget, Antonio stated that he is working on Subprogram priorities. One priority area will be hydrogen sensor R&D work for sensors for hydrogen fueling station and stationary fuel cell applications. He envisions issuing an RFP for sensor technology work on the order of \$1.5 – 2.0 million. Antonio stated further that he will provide details regarding Subprogram priorities at the next teleconference meeting.

The question was asked if Antonio was aware of the sensor work being done by ISO/TC197 and IEC/TC31. Antonio responded that DOE was aware of their work and the new work to be done in the Safety and Codes and Standards Subprogram would be coordinated with it.

5.0 DISCUSSION: NEW YORK CITY'S REVISION OF ITS CODES AND IMPACT ON HYDROGEN AND FUEL CELL TECHNOLOGIES

Ken Krastins (Plug Power) provided an update regarding comments submitted to the New York City Fire Department (NYFD) on behalf of the NHA and the USFCC regarding changes being made to the City's

construction codes relating to hydrogen and fuel cells. Plug Power submitted its own comments, along with written comments from the USFCC and electronic comments from NHA. All three sets of comments were submitted in accordance with the December 28, 2007 due date. NYFD held a public meeting on December 20th to discuss proposed changes to the codes.

NYFD is required to act on comments. They will review the comments and make their decisions regarding accepting or not accepting them. The next step is not known for sure. A public meeting may or may not be forthcoming after the review process. When the review process is completed, NYFD will submit the final versions of the codes to the City Council for approval. This may occur in January or later.

Stored fuel gas may be allowed, and the changes to the Mechanical Code to allow it may be recommended to make the Fire Code the appropriate regulatory document for stored fuel gas. This may require Fire Department approval, but the strict prohibition would be lifted.

[USFCC Letter with Fuel Cell Industry Comments \(42Kb PDF\)](#)

The website providing the actual fire code is: <http://www.nyc.gov/html/fdny/html/firecode>

NREL and DOE had planned on conducting a "Hydrogen Fueling Station Permitting Workshop" in the New York City area in FY08. Given the concerns that the City has about hydrogen, Jim Ohi mentioned that DOE and NREL will expand the scope of the planned workshop to also address "Hydrogen Properties and Applications". Jim also mentioned that NREL and DOE are open to working with NHA and USFCC in planning and conducting the workshop, probably in late Spring. Jim will work with Karen Hall and Robert Wichert to include fuel cell stationary installations in the workshop.

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)) reported on the Public Hearing on the hydrogen fuel quality regulation held on December 17th. As a result of the Hearing, the regulation is undergoing some minor editorial changes to define terms and refine the implementation date. The proposed changes will be posted on the California web site. After the changes are made the regulation will undergo a new 15-day comments period.

Gary Nakarado asked about the web-casting of public hearings or making the web-cast available after the meeting. There are no plans to do this. Assuming there are no new issues to be addressed, the regulation will then be sent to the California Office of Administrative Law for approval. Then, it will be sent to the Secretary of State for approval. When signed, it will be law. This could take place approximately a month from now.

The proposed regulation has is posted on the following website:

<http://www.cdfa.ca.gov/dms/hydrogenfuel/HydrogenFuelRegulations.pdf>

7.0 REPORT ON THE CALIFORNIA FUELS PROJECT'S EFFORTS TO DEVELOP A CALIFORNIA-SPECIFIC HYDROGEN FUEL DISPENSER STANDARD

John Mough reported that Norm Ingram was unavailable for January's meeting, but would give a report in February's meeting.

An action item from December's meeting was for Russ Hewett to contact Julie Cairns at CSA regarding getting DMS involved in the work of the technical committees developing the **HGV4 Series** of draft standards. When Russ contacted Julie, CSA was on its extended Holiday Break, so Julie had not established contact with DMS prior to January's meeting. This will be done before February's meeting.

8.0 REPORT ON HYDROGEN INDUSTRY PANEL ON CODES (HIPOC) ACTIVITIES

Tom Joseph (HIPOC chairperson) reported on HIPOC activities. HIPOC held its first meeting since August on January 8th. The purpose of the meeting was to identify the immediate items on which to focus, given that the ICC 2007/2008 code development cycle is in progress and that **NFPA 52** and **NFPA 55** are in their revision cycles.

Darren Meyers has identified 10 hydrogen-related proposed changes to the I Codes –nine for the **IFC** and one for the **IBC**. HIPOC will study the proposals to determine the ones that it will support at the ICC Code Development Hearings to be held February 18 – March 2 in Palm Springs, CA.

For **NFPA 52**, a total of 259 proposals have been submitted. For **NFPA 55**, 133 proposals have been submitted. Those totals are for all types of proposals. Carl Rivkin has the action item to analyze them to determine those that are hydrogen-related. Those will be the ones on which HIPOC focuses.

The next HIPOC meeting is scheduled for Wednesday, February 13th at 2:00 EST.

9.0 REPORT ON NFPA ACTIVITIES

In Carl Rivkin's and Marty Gresho's unavailability, Russ Hewett gave a brief report.

The meetings of the full Hydrogen Technologies Technical Committee for **NFPA 2** scheduled for February 12-13 at NREL have been re-scheduled for June 17-18 at NREL. Some of the task groups need additional time. However, several task groups will have meetings at NREL in late January and early February. Based on the additional work that needs to be done, NFPA is planning on slipping the development cycle. The document is currently in the F2009 revision cycle. Carl stated that the committee can discuss what cycle they want to place the document in at the next meeting.

10.0 DOT'S EFFORTS TO DEVELOP A DRAFT R&D PLAN RELATING TO HYDROGEN TRANSPORT AND INFRASTRUCTURE

Bill Chernicoff gave a brief report on the Draft R&D Plan developed by DOT to address hydrogen transport and the related infrastructure. The Plan does not address vehicles or hydrogen fueling station dispensing. It addresses a subset of the R&D items identified by DOT and documented in the report **DOT-T-06-01 (Hydrogen Infrastructure Safety Technical Assessment and Research Results Gap Analysis)**.

In preparing the Plan, a wide breadth of stakeholder input has been included. The final version is expected to be available prior to the end of January.

None of the R&D articulated in the Plan is being significantly addressed in FY08. Bill expects that implementation would begin in FY10.

11.0 CODES & STANDARDS PRIORITIES: NHA

Karen Hall gave a summary of the presentation that she gave regarding NHA codes and standards priorities at the October in-person meeting of the Committee held in San Antonio. The summary was given for the benefit of Committee members who were not able to be at the in-person meeting.

[Karen Hall's report](#) (602Kb PDF)

In addition, the NHA has identified specific items of interest, including the following:

- NFPA, ICC and HIPOC activities to harmonize US model codes for hydrogen,

- CSA HGV4 Series of standards,
- UL 2264 series,
- ASME BPVC for composite tanks
- SAE J2579

The NHA is actively involved in the model code work, and is working with the POCs for the other priority items for articles for the Hydrogen & Fuel Cell Safety Report and any additional coordination.

12.0 CODES & STANDARDS PRIORITIES: USFCC

Similarly, Robert Wichert gave a summary of the presentation (slightly revised) that was given by Tony Androsky regarding USFCC codes and standards priorities at the October in-person meeting of the Committee held in San Antonio. The summary was given for the benefit of Committee members who were not able to be at the in-person meeting.

[Tony Androsky's presentation](#) (118Kb PDF)

13.0 REPORT ON IEC/TC105 ACTIVITIES AND DOCUMENTS IN THE "COMMENTS" STAGE

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

[Kelvin Hecht's report](#) (97Kb PDF)

14.0 REPORT ON ISO/TC197 ACTIVITIES AND DOCUMENTS IN THE "COMMENTS" STAGE

Glenn Scheffler, with input from Debbie Angerman, reported on December activities of the US TAG to ISO/TC197.

There will be a joint teleconference meeting within a couple of weeks (**Friday, January 25th at 1:00 pm EST**) with the US TAG for ISO TC 58/SC3 to establish a US position on **ISO/DIS 16111, Transportable gas storage devices-Hydrogen absorbed in reversible metal hydride**. Close of U.S. TAG voting is February 21, 2008.

The draft standard **ISO/DIS 15869 Gaseous hydrogen and hydrogen blends- Land vehicle fuel tanks** will be available soon for balloting.

Now that draft technical specification **ISO/DTS 20012 Gaseous hydrogen-Fuelling stations** has been approved, efforts will focus on developing a draft international standard. The US TAG's objective in the DIS process will be to help move the document's development in a way that does not create conflicts with US codes and standards relating to hydrogen fueling stations. Consequently, the US TAG is seeking additional US energy companies and vehicle manufacturers to participate in the work of Working Group 11 to develop the DIS. ISO/DTS 20012 includes 30 pages of comments that will be addressed by the TAG. (It appears that WG 11 for **ISO/TS 20012** will incorporate some of the open comments on the DTS into the document before it is published. Working group members should contact the project leader for more details.)

Anyone interested in participating in the work of WG11 is being asked to contact either one of the following:

- Debbie Angerman at Dangerman@cganet.com
- Glenn Scheffler at gwssol@aol.com

For a copy of **ISO/DTS 20012** and the comments, contact Debbie Angerman.

15.0 OPPORTUNITY FOR CDOS, SDOS AND OTHERS TO REPORT ON THEIR ACTIVITIES

15.1 DOT/Global Technical Regulations

Nha Nguyen reported on the status of Global Technical Regulations (GTR) for fuel cell vehicles. He promised to give us a detailed report on the meeting that will be held later this month. The first meeting of the Subgroup on Hydrogen was held in September in Bonn, Germany. The meeting minutes are available at the UNECE web site. At that meeting, the Japanese regulations, being the only available regulations, were reviewed. Presentations from other countries were also provided.

Since the Japanese regulations were the only ones available, they will be used for discussion in developing the fuel cell vehicle GTR.

The next meeting will be in Geneva during the week of January 14th. Three items will be covered:

1. Hydrogen container/storage system
2. Leak rate control
3. Electrical Safety

Nha will give a detailed report regarding the meeting as part of the February teleconference meeting.

15.2 National Institute of Standards Technology (NIST)

Russ Hewett gave a brief report on NIST activities, as Juana Williams was unable to participate because of a prior commitment. Juana will be attending the January 27 - 30, 2008 National Conference on Weights and Measures in Albuquerque NM and report to the Specifications and Tolerances Committee on the work to develop hydrogen refueling equipment and fuel quality standards and test procedures. Also, she will talk to State Weights and Measures Program Directors who have refueling equipment in their jurisdictions.

During December's meeting, Juana reported that "there are no duplications or conflicts in the California DMS/NIST efforts and those of CSA America." However, she did not mean that to be a blanket statement. There are issues requiring discussion. For example, she apprized Russ Hewett of the issue of use of the term "Gasoline Gallon Equivalent."

15.3 CSA America

Julie Cairns gave a brief report on CSA activities. Of the draft standards being developed by CSA, the status is as follows:

- Development of **HPRD1 (Pressure Relief Devices for Compressed Hydrogen Vehicle Fuel Containers)** has been completed
- Eight of the 12 **HGV4 Series** of draft standards are out for industry review

Julie invited Committee members to participate in the review of the documents and provide comments. She will provide links to the documents on the NHA website and the Hydrogen and Fuel Cell Codes and Standards Matrix Database web site operated by Kelvin Hecht.

Kelvin reported that there will be a teleconference meeting next week to address updating of **CSA FC 1 (Stationary Fuel Cell Power Systems)**.

15.4 Society of Automotive Engineers

Glenn Scheffler provided an update on SAE work. **TIR J2579 (Technical Information Report for Hazardous Fluid Systems in Fuel Cell Vehicles)** was successfully balloted and published. Free copies are being provided to the US delegates going to the Global Technical Regulations meeting being held in Geneva.

J2578 (Recommended Practice for General Fuel Cell Vehicle Safety) is in the revision process. One issue being addressed is post-crash hydrogen loss: how to make it equivalent to gasoline loss. Glenn

expects the revised document to be submitted for balloting during the first half of the year.

15.4 ASME

John Koehr reported that the ASME Hydrogen Tank Team will be meeting in Boston on February 6th.

15.5 ISO/TC 197 WG12 (Hydrogen fuel – Product specification)

Jim Ohi provided an update on the work going on regarding hydrogen purity effects on fuel cell durability. The laboratory round-robin testing has been nearly completed and several meetings are planned for the near future regarding who is going to do what to move the work forward in a coordinated manner.

16.0 OPEN DISCUSSION AND OTHER ISSUES

Kelvin Hecht briefed the Committee on the restructuring and upgrading of the web site hosting the Hydrogen and Fuel Cells Codes & Standards Matrix and Database. The web site is <http://www.fuelcellstandards.com>.

The objective was to improve user-friendliness. Kelvin invited Committee members to view and critique the website.

There was discussion regarding when and where to have the next in-person meeting of the Committee. Members were asked if there was a topic or issue around which to base the meeting.

It was agreed that the discussion would be continued at February's teleconference meeting.

NHA offered to host an In-Person meeting in conjunction with the NHA Annual Hydrogen Conference 2008 to be held March 30 – April 4 in Sacramento, CA.

17.0 NEXT MEETING OF THE NH&FCC&SCC

The next meeting will be a teleconference meeting as follows:

- DATE: February 6th (First Wednesday)
- TIME: 3:00 – 4:30 pm EST

ATTACHMENT A: PARTICIPANTS IN THE JANUARY 2008 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 & Associates, Inc.	

Anna Stukas	Angstrom Power	
Antonio Ruiz	USDOE/Hydrogen, Fuel Cell and Infrastructure Technologies Program	Yes
Bill Chernicoff	USDOT/Research and Innovative Technologies Administration (RITA)	Yes
Bill Collins	UTC Fuel Cells	
Bill Hoagland	Hoagland and Associates	
Brad Smith	Shell Hydrogen	Yes
Carl Rivkin	National Fire Protection Association (NFPA)	
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	
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	Yes
Greg Milewski	Shell Oil Products	
Hank Seiff	Clean Vehicle Education Foundation	Yes
Holly Thomas	NREL	
Jackie Birdsall	California Fuel Cell Partnership	
Jesse Schneider	DaimlerChrysler	
Jim Martin	Shell Hydrogen	Yes
Jim McGetrick	BP	
Jim Ohi	National Renewable Energy	Yes

	Laboratory (NREL)	
John Koehr	American Society of Mechanical Engineers (ASME)	Yes
John Mough	California Division of Measurement Standards	Yes
Jonathan Muntez	U.S. DOE	Yes
Jonathan Otero	BP	
Juana Williams	NIST	
Julie Cairns	CSA America	Yes
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	
Nha Nguyen	NHTSA/Office of International Policy and Harmonization	Yes
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	
Russ Hewett	National Renewable Energy Laboratory	Yes
Sam Sprik	National Renewable Energy Laboratory (NREL)	
Samuel Lam	British Columbia Ministry of Transportation	Yes
Sheral Arbuckle	Ford Motor Company	
Sondra Ullman	Plug Power	
Terry Conrad	Concurrent Technologies Corp.	Yes
Thad Adams	Savannah River National Laboratory	
Tom Joseph	Air Products and Chemicals	Yes
Tony Androsky	US Fuel Cell Council (USFCC)	

Guest Participants

1. Chad Blake (NREL)
2. Kirstin Burpee (Bloom Energy)
3. Carla Conny (Bloom Energy)
4. Mark Williams (DOE/HQ)