

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

MEETING DATE: February 6, 2008

MEETING TIME: 1:00 – 2:30 PM (MST)

FACILITATOR: Russ Hewett, NREL

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.

2.0 REVIEW OF USFCC ANTITRUST GUIDELINES

USFCC members were asked by Russ Hewett 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 January 9th 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 reported of activities at DOE/HQ.

The FY09 Budget rollout was on Monday. The budget request for the overall Hydrogen, Fuel Cell and Infrastructure Technologies (HFCIT) Program is \$146M. In FY09, the Safety, Codes & Standards Subprogram is scheduled to move to the Vehicle Technologies Program, together with some other Subprograms, including the Technology Validation Subprogram. The budget requests for the Production Program and the Manufacturing Program are zero. For the Safety, Codes & Standards Subprogram, the request for FY09 is \$12.5M, compared to \$16.0M for FY08.

Antonio reported that \$1.2 Billion Presidential commitment for hydrogen vehicle development will have been met at the end of FY08.

For FY08, Safety, Codes and Standards Subprogram priorities are as follows:

- Continuation of support for codes and standards development
- Continued development of the Hydrogen and Fuel Cells Codes and Standards Website to include other applications
- Continuation of the hydrogen fuel quality work
- Sensor technology development
- Support for components testing
- Materials compatibility work
- Continuation of support for the separation distances work
- Development of tools for first responders
- Training for first responders and permitting officials

Antonio reported that the Subprogram plans to issue an RFP to select up to three contractors to perform sensor technology development work in FY08 and FY09. He estimates that for FY08, the efforts would be for \$1.0M. In FY09, efforts would be for \$1.5 – total of \$2.5M for all efforts.

Near-term DOE/HQ activities include:

- Participating in the NIST workshop at the end of March
- Participating in the Hydrogen Fueling Station Permitting Process Workshop to be held in Southern California March 12 and 13 in conjunction with the annual conference of the California Fire Prevention Institute
- Participating in the next C&S Tech Team meeting that will be held immediately after the NIST workshop

Antonio also reminded everyone that the DOE merit review will be held the week of June 9th at the Crystal City Marriott Hotel in Alexandria, VA.

The question was asked, given that the Subprogram will be moving to the DOE Vehicle Technologies Program, will it continue to support codes and standards develop work for applications other than vehicles. Antonio stated that the Subprogram will continue to support codes and standards development work for the other applications of hydrogen and fuel cells.

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

There was no additional discussion regarding specific things going on with respect to the planned changes to the New York City codes.

Rather, Karen Hall (representing NHA) and Tony Androsky (representing USFCC) presented a proposal for initiating an effort targeted at key City officials to pave the way for a workshop that would familiarize City permitting and fire safety officials with the hydrogen and fuel cell technologies and the permitting of hydrogen fueling station and fuel cell projects.

NHA and USFCC are interested in beginning a productive dialog with the New York City Authorities Having Jurisdiction (AHJs). Since both organizations are under contract with NREL to deliver one more joint workshop by March 31, they are proposing to invite Jim Hansen (Chief of NY City Fire Department and responsible for the City's Fire Code) and two other key NYC AHJs to the NHA annual conference in Sacramento.

They would arrange for their flights and hotel for a half-day meeting on Monday, March 31st. They would also invite a couple of experienced AHJs from California to describe the projects they have permitted, with a focus on hydrogen fuelling stations and one or more hydrogen fuel cells. They would also invite a few hydrogen and fuel cell companies to highlight projects they have successfully sited, as well as some plans for NYC.

NHA and USFCC would arrange for the meeting to be in a board room that holds about 10-12 people, to facilitate productive dialog. In addition to familiarizing the guests with hydrogen and fuel cells, the other objective would be to learn what NYC would need from the hydrogen and fuel cell industries to facilitate the future permitting of these technologies in the City. Jim Hansen has suggested conducting a study similar to the one they performed that led to the eventual permitting of natural gas storage and fuelling.

The City representatives would be treated as guests, and given a tour of the exhibits, making scheduled stops at pre-arranged booths to see and touch the technologies. They would also be taken to the Ride & Drive demos, so they can ride and drive the vehicles, and experience hydrogen fueling.

NHA and USFCC would use this meeting as the beginning of a very important dialog. In addition, it is anticipated that recommendations would be generated for continued dialog.

After articulating the proposed meeting, NHA and USFCC asked Committee members for their reactions and

feedback. NHA and USFCC feel that the NY City proposal could have a positive impact and represents a unique opportunity to give the key city AHJs a chance to begin to become comfortable with hydrogen and fuel cell technologies.

Chris Sloane noted that the CaFCP fueling station is out-of-date and is not representative of the fueling stations planned for NY City. She cautioned that Sacramento may not be the best showcase, and that it may not be possible to get the AHJs to California. She suggested that we do NOT tour the CaFCP station – but instead look into taking the guests to the new BP station at SMUD.

Leslie Crowell agreed to identify a contact at BP with which to interact and e-mail it to Karen Hall.

Chris Sloane suggested that NHA and USFCC consider having the meeting in Washington, DC, since having it there would be conducted in an environment that they could control. Furthermore, the Shell HFS in DC is more state-of-the-art.

Karen acknowledged these concerns, and noted that a major advantage of meeting with the City representatives at the NHA annual conference is the fact that the speakers, vehicles, refueling, and other exhibits will already be there. If the meeting were held in Washington, all of these would need to be arranged specially for the meeting. It is unlikely that it could be arranged and conducted by the March 31 deadline. Russ Hewett confirmed that a no-cost extension to the contract with NHA could be arranged to allow a meeting in Washington to be conducted after March 31st.

Karen agreed to work with Tony Androsky and determine whether the key NYC people would be willing to meet with us in either location, and get back with Antonio, Jim and Russ with the results and their recommendations.

Jim Ohi re-iterated that NREL and DOE had planned on conducting a “Hydrogen Fueling Station Permitting Workshop” in the New York City area in the late spring of FY08 but it will be expanded in scope to include: (i) hydrogen familiarity; and (ii) fuel cells and other applications. The meeting that NHA and USFCC plan to have with the NY City officials can also be used to get input from them regarding the agenda for the spring 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 that the 15-day comments period following the Public Hearing on the hydrogen fuel quality regulation had ended. Several comments were received and, as a result, DMS made two minor changes. The changes were:

1. particulate concentration is described in terms of mg/liter NTP (i.e., Normal Temperature and Pressure) and NTP conditions were defined
2. DMS will adopt interim test procedures as they are developed by DMS or an ANSI-approved SDO

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

Marty Gresho reported that HIPOC is preparing for the ICC Code Development Hearings that will take place February 18 – March 2 in Palm Springs, CA. in conjunction with the ICC 2007/2008 Code Development Cycle. Darren Meyers has identified 10 hydrogen-related proposed changes to the I Codes – nine for the **IFC** and one for the **IBC**. The next teleconference meeting will be held on February 13th.

In addition, HIPOC has initiated reviewing the Request for Proposals (ROPs) that have been received by NFPA in conjunction with the revision cycles for **NFPA 52** and **NFPA 55**. For **NFPA 52**, a total of 259 proposals have been submitted. For **NFPA 55**, 133 proposals have been submitted. In preparation for the February 13th meeting, Carl Rivkin has the action item to sift through the ROPs to identify the hydrogen-specific ones for HIPOC review and consideration.

9.0 REPORT ON NFPA ACTIVITIES

In Carl Rivkin's unavailability, Marty Gresho gave a brief report on **NFPA 2** efforts.

Marty reported that **NFPA 2** is now on the annual 2010 cycle, rather than the 2009 cycle, a one-year slip. This will provide the technical committee with more time to extract materials from other NFPA documents, especially **NFPA 52** and **55**. In fact, several **NFPA 2** task groups have submitted ROPs for changes to **NFPA 52** and **55** – i.e., task groups have written code for **NFPA 52** and **55** that would later be extracted for incorporation into **NFPA 2**.

The technical committees for **NFPA 2** and **NFPA 55** are working jointly on the separation distances issue and their respective task groups held a meeting at NREL in late January. The work is coming together. They reached a consensus on a separation distances table and submitted it as a ROP for **NFPA 55**. Marty reported that **quantitative risk assessment** was used in developing the agreed-upon distances. The ROP will be considered at the meeting of the NFPA 55 technical committee on April 16 and 17 to address the submitted ROPs. Assuming the table is adopted for **NFPA 55**, it will then be extracted back into **NFPA 2**.

The next **NFPA 2** full technical committee meeting will be held June 26 and 27 at NREL.

October 2008 is the target for having a complete draft of **NFPA 2** that can be disseminated for comment.

10.0 REPORT ON HYDROGEN VEHICLE GLOBAL TECHNICAL REGULATION (GTR) EFFORTS

Nha Nguyen (DOT/NHTSA Office of International Policy & Harmonization) reported on the meeting of the Subgroup on Hydrogen for the Global Technical Regulation for Fuel Cell Vehicles. The meeting was held January 13-16 in Geneva Switzerland. He reported that there was a good turnout from both Government and industry. The US and Japan jointly chaired the meeting. Since Japan is the only country having a regulation, the Subgroup is using the Japanese regulation as its reference document. However, it is limited to hydrogen stored at pressures only up to 5000 psi.

The on-board storage system, including the container, is the least mature item for the Global Technical Regulation at this time. Because of the 5000 psi limit of the Japanese regulation, Subgroup members were given copies of **SAE J2579 (Technical Information Report for Fuel Systems in Fuel Cell and Other Hydrogen Vehicles)** for consideration in crafting the GTR. However, the requirements in the TIR have not yet been validated. SAE testing is underway. Also, NHTSA is doing bonfire and other testing. The requirements will be in square brackets until fully validated.

With respect to electrical safety, the Electrical Safety Subgroup is currently updating R100 requirements to include fuel cell vehicles. The Global Technical Regulation group has an opportunity to work with them. This requires WP-29 agreement so that the Subgroup can work on the GTR as well.

Another issue considered at the meeting was fuel integrity – more specifically, establishment of the allowable leak rate and how to perform leak rate testing. In the US, post-crash testing is conducted. However, in other places (i.e., Japan and Europe) in-use testing is conducted. Nha estimates that both in-

use and post-crash leak rate limits will have to be established.

In response to a question on the medium for the leak rate test, Nha explained that only Japan has established a leak rate limit. The GTR needs a study or testing. The GTR is presently using the same method as was used to establish CNG requirements. The GTR group has not set a value yet, or established how to detect it. Some manufacturers are using pressure drop between the lines. The medium has not been established yet. **SAE J2979** is the basis of the GTR requirement. The Japanese regulation is posted on the website.

The GTR meeting participants discussed how to establish performance-based requirements for components, rather than design-based, such as PRDs, sensors, etc. Also, they discussed the need for testing data, analysis and studies to support the requirements in the GTR. Nha is asking industry to share data for use in supporting the GTR. Since, in general, the data are sensitive and proprietary, industry has been reluctant to make it available. The data are needed to help provide the technical basis for the GTR.

Minutes from the January meeting will be posted shortly. The next meeting will be held the week of May 13 in Washington, DC. At this meeting, the automotive industry will have the opportunity to articulate what they would like to see in the GTR.

The web address for HFCVGTR SGS documents (including GTR meeting minutes) is: http://www.unece.org/trans/main/wp29/wp29wgs/wp29grsp/sgs_1.html

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

During January's meeting, 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)**.

Since Bill was unavailable for the February meeting, Russ Hewett reported that, in talking with Bill before the meeting, the document is not yet available for dissemination, and Bill said that he would let the Committee know when it does become available.

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

Kelvin Hecht reported on IEC/TC105 activities in January, 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 – the website being: <http://www.fuelcellstandards.com>

[Kelvin's report](#) (106Kb PDF)

In discussing website activity, Kelvin noted the growing interest from China.

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

Both Debbie Angerman and Glenn Scheffler, were unavailable for participating in the meeting. However, Debbie submitted the attached report.

[Debbi's report](#) (93Kb PDF)

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

14.1 National Institute of Standards Technology (NIST)

Juana Williams reported on NIST activities. She reported that she attended the National Conference on Weights and Measurements held in Albuquerque January 27 – 30. At the conference she reported to the Specifications and Tolerances Committee on the work to develop hydrogen refueling equipment and fuel quality standards and test procedures. The Meter Manufacturing Association also met in Albuquerque and Juana briefed them on the hydrogen work well.

The next meeting of the NIST US National Working Group will be held March 4-6, 2008 at the California Fuel Cell Partnership in West Sacramento, CA. The agenda will include:

- Device standard
- Working on a fuel specification
- Handbook 44 draft hydrogen meters code

14.2 CSA America

Julie Cairns gave a brief report on CSA activities. Eight of the 12 HGV4 Series of draft standards are out for industry review. NHA and USFCC plan to include information about the documents on their websites. Comments are due by March 5. Julie invited Committee members to participate in the review of the documents. The next meetings of the technical advisory groups will be held during the week of March 10 in Cleveland, OH to review comments. CSA plans to publish these as "interim requirements" documents through 2009 so they can be used in support of demonstration projects. The OEM fuelling guideline is the industry standard. Temperature compensation and fueling systems are still to be completed. The target date for publication of the drafts is May. SAE TIR J2579 is the base for the HGV document on harmonization.

The process for reviewing and commenting on CSA documents is as follows:

1. Click on the link <https://review.csa.ca/opr/> and you will be directed to the CSA America website Review and Comment home page
2. Follow the directions on the site to download and view the review and comment text.
3. Complete the online form for comment or criticism, as necessary. A rationale statement is required for any suggested revisions or disapproval of the proposed text.
All comments or criticisms will be considered by the HGV 4 series technical advisory groups at meetings March scheduled for the week of March 10-14, in Cleveland, Ohio.

Draft Documents Currently Available for Review and Comment

Draft	Date Posted	End Date
HGV 4.1 - Review and Comment for Draft Standard - HGV Dispensing Systems	Feb. 4, 2008	Mar. 5, 2008
HGV 4.10 - HGV 4.10 Fittings Review and Comment	Dec. 20, 2008	Feb. 20, 2008

HGV 4.2 - Review and Comment for Draft Standard - Hoses for Compressed Hydrogen Vehicles & dispensing Systems	Feb. 4, 2008	Mar. 5, 2008
HGV 4.4 - Review and Comment for Draft Standard - Breakaway Devices for Hoses Used in Compressed Hydrogen Vehicle Fueling Stations HGV 4.4 - Review and Comment for Draft Standard - Breakaway Devices for Hoses Used in Compressed Hydrogen Vehicle Fueling Stations	Feb. 4, 2008	Mar. 5, 2008
HGV 4.5 - Review and Comment for Draft Standard - Priority and Sequencing Equipment for Hydrogen Gas Vehicle Fueling	Feb. 4, 2008	Mar. 5, 2008
HGV 4.6 - Review and Comment for Draft Standard - Manually Operated Valves Used in Gaseous Hydrogen Vehicle Fueling Stations	Feb. 4, 2008	Mar. 5, 2008
HGV 4.7 - Review and Comment for Draft Standard - Automatic Valves for use in Gaseous Hydrogen Vehicle Fueling Stations	Feb. 4, 2008	Mar. 5, 2008
Z21.50-2007/CSA 2.22-2007 - Review and Comment for Vented Gas Fireplaces Standard	Feb. 1, 2008	Mar. 30, 2008
Z21.88-2005/CSA 2.33-2005 - Review and Comment for Vented Gas Fireplace Heaters Standard	Feb. 1, 2008	Mar. 30, 2008

Julie mentioned that the draft standard **HPRD1** is out for comment and that CSA has initiated collaboration with the California Division of Measurement Standards.

14.3 Society of Automotive Engineers

Mike Steele reported that **SAE TIR J2579 (Technical Information Report for Hazardous Fluid Systems in Fuel Cell Vehicles)** has been published. (Free copies were given to the US delegates going to the GTR meeting held in Geneva.)

Voting is in progress on the latest revision to **J2719 (Information Report on the Development of a Hydrogen Quality Guideline for Fuel Cell Vehicles)**. If it passes, SAE plans to publish it in April or May.

16.0 OPEN DISCUSSION AND OTHER ISSUES

Normally, the Committee would be planning for one of the In-Person meetings that it tries to conduct annually. This was discussed. However, since there was no specific topics that could be the focus of such a meeting, the Committee opted to have a teleconference meeting in March

Jim Ohi noted the DOE Hydrogen Fueling Station Permitting Workshops are continuing. The next one will be March 12-13 in conjunction with the California Fire Prevention Institute Annual Workshop being held in Santa Ynez, CA. This one will focus on key fire safety and building code officials in southern California.

17.0 NEXT MEETING OF THE NH&FCC&SCC

The next meeting will be a teleconference meeting as follows:

- DATE: March 5th (First Wednesday)
- TIME: 3:00 – 4:30 pm EST

ATTACHMENT A: PARTICIPANTS IN THE FEBRUARY 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)	
Bill Collins	UTC Fuel Cells	Yes
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)	

Debbie Angerman	Compressed Gas Association (CGA)	
Doug Horne	Clean Vehicle Education Foundation	
Gary Nakarada	Regulatory Logic	
Glen Schleffler	Consultant to NREL	
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 McGetrick	BP	
Jim Ohi	National Renewable Energy Laboratory (NREL)	Yes
John Koehr	American Society of Mechanical Engineers (ASME)	
John Mough	California Division of Measurement Standards	Yes
Jonathan Muntez	U.S. DOE	Yes
Jonathan Otero	BP	
Juana Williams	NIST	Yes
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	Yes
Lesley Crowell	California Air Resources Board	Yes
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	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)	
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.	
Thad Adams	Savannah River National Laboratory	Yes
Tom Joseph	Air Products and Chemicals	Yes
Tony Androsky	US Fuel Cell Council (USFCC)	Yes

Guest Participants

1. Chad Blake (NREL)
2. Marty Gresho (Sandia/NFPA2)
3. Dick Medwick (Swagelok)
4. Mark Williams (DOE/HQ)
5. George Mitchell (Chrysler)