

**MINUTES OF THE TELECONFERENCE MEETING OF THE
NATIONAL HYDROGEN AND FUEL CELLS CODES AND STANDARDS COORDINATING COMMITTEE**
Russel Hewett, NREL

MEETING DATE: September 7, 2005
TIME: 1:00 - 2:30 PM (MDT)

1.0 PARTICIPANTS

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

2.0 REVIEW OF ANTI-TRUST POLICY

USFCC Codes and Standards Working Group meetings begin with the reminder to review and follow the anti-trust guidelines at the following web sites:

http://www.usfcc.com/members/ANTITRUST_GUIDELINES_REV.pdf

and

http://www.usfcc.com/members/Memo_on_Antitrust_Guidelines.pdf

3.0 CORRECTIONS TO MINUTES OF AUGUST MEETING

There were no additions or corrections to the Minutes of the August 3rd teleconference meeting.

**4.0 OPPORTUNITY FOR DOE/HQ SUBPROGRAM MANAGER TO
REPORT ON WHAT'S GOING ON AT DOE/HQ**

Pat Davis (DOE/HQ Technology Development Manager for Safety, Codes and Standards) and Jim Ohi were attending the First International Conference on Hydrogen Safety in Pisa, Italy and were not available to report on what's going on in the Hydrogen, Fuel Cells and Infrastructure Technologies (HFCIT) Program in general and the Safety and Codes and Standards SubProgram in particular - especially funding for FY06.

Russ Hewett reported that it appears the Safety and Codes and Standards SubProgram "appears to be holding its own" as the resources for the FY06 HFCIT Program are being allocated. For FY06, funding for the codes and standards subcontracted activities (including R&D-related subcontracts) is likely to be in the range \$600,000 - \$700,000. He reported that, using the guidance from DOE/HQ, he has generated the (tentative) FY06 subcontracts plan. There is a good chance that some of the efforts that were prematurely terminated in FY05 (because of Congressional earmarks) may go forward in FY06.

Russ stated that if "public information" regarding the SubProgram (including the budget) becomes available before the Minutes are completed and disseminated, he will make it an attachment to the Minutes.

**5.0 REPORT ON VOTING ON NEW WORK ITEM PROPOSAL
FOR ISO/TC197 SUBMITTED BY JAPAN: HYDROGEN
DETECTORS**

Japan has submitted a New Work Item Proposal to ISO/TC 197 entitled Hydrogen Detectors (ISO/TC 197 N310).

Bob Mauro (Chairman of the US ISO/TC197 TAG) and Debbie Angerman reported on how the US voted (internally) on the proposal. Disappointingly, only nine of the 37 members of the US TAG for ISO/TC197 voted. The voting was as follows:

- Four votes in favor of the Japanese proposal
- Three votes against
- Two abstentions

Because of the low participation in the voting and the "lack of a trend" in the votes actually cast, the US vote to ISO was an Abstention.

While voting to Abstain, the US TAG submitted a comment: that efforts be devoted to revising either or both of the following two existing standards to accommodate hydrogen:

- UL 2075 (Standard for Gas and Vapor Detectors and Sensors)
- IEC 61779 (Electrical Apparatus for the Detection and Measurement of Flammable Gases)

Bob and Debbie identified the need to discuss what to do about low TAG participation at its meeting scheduled for October 2005.

6.0 REPORT ON DRAFT INTERNATIONAL STANDARD (DIS) ISO/DIS22734-1

Bob Mauro and Debbie Angerman reported on the status of draft international standard ISO/DIS22734-1 (Hydrogen Generators Using Water Electrolysis Process Part 1: Industrial and Commercial Applications) which is out for voting and commenting internationally.

From the perspective of US interests, Bob and Debbie reported that there are no serious problems with the draft. The strategy in constructing it was to utilize references to existing standards, rather than develop new requirements for the components in these types of systems. And furthermore, the fact that the document does not address generators for residential applications alleviated a US concern (generators for residential applications are addressed in companion standard ISO/CD22734-2).

The US ISO/TC197 TAG wants its members to provide their votes and comments by October 11th, so that they can be discussed at the TAG meeting scheduled for October.
The US has to submit its vote (and comments) to ISO by December 29, 2005.

7.0 REPORT ON DRAFT STANDARD IEC 622182-6-1

Kelvin Hecht (chairman of the US IEC/TC105 TAG) reported on the status of the Committee Draft of the standard IEC 62282-6-1 (Fuel Cell Technologies- Part 6-1: Micro Fuel Cell Power Systems - Safety). It is out for comments internationally with the comments due back to IEC by November 4, 2005.

US IEC/TC105 TAG comments are due October 21st -- for formulating the US position.

Russ Hewett asked Kelvin about the makeup of the US IEC TAG and its participation in TAG activities, compared to that of the US ISO/TC197 TAG. Kelvin reported that the TAG has representatives from approximately 30 organizations - most of which are new fuel cell manufacturers. Since Kelvin is also a member of the ISO/TC197 TAG, he was of the opinion that the participation in the IEC TC/105 TAG is better than that of the ISO TAG.

8.0 REPORT ON DRAFT STANDARD IEC 62282-3-1

Kelvin Hecht reported on the status of IEC 105/80NP:62282-3-1 (Fuel Cell Technologies - Part 3-1: Stationary Fuel Cell Power Systems - Safety). It is out for comments internationally - the comments due to IEC by October 21, 2005. With respect to the US IEC/TC105 TAG, comments are due by September 30th. Kelvin reported that several have already been received.

In addition, the Draft has been made available to the US ISO TC/197 TAG for their review and commenting. Debbie Angerman reported that the ISO TAG would submit their comments by September 21st.

9.0 NFPA ACTIVITIES

Carl Rivkin reported on various NFPA activities.

On August 25th, the NFPA's Standards Council issued the new edition of NFPA 52: Vehicular Fuel Systems Code: 2006 Edition. It should be available for ordering within a few weeks.

The standard NFPA 853: Standard for the Installation of Stationary Fuel Cell Power Plants is going through its normal revision process. The current version is the 2003 Edition.

The Standards Council approved the recommendation to consolidate all of the hydrogen safety requirements in its various codes and standards documents into a single document that would tentatively be entitled NFPA 2 (Hydrogen Technology).

NFPA Announcement Re: the Decision to Consolidate (69Kb PDF)

The Hydrogen Technology Correlating Committee (HTCC) will be responsible for creating the new document by:

- Extracting hydrogen and fuel cell requirements from the various existing NFPA documents (e.g., NFPA 52, etc.)
- Identifying areas/issues not covered in existing documents
- Developing new materials to cover gaps and resolving conflicts in requirements.

The HTCC would consist of the chairpersons of the various NFPA technical committees responsible for the documents from which materials are extracted. Additional persons will be appointed to the HTCC by the Standards Council to achieve the desired balance.

The codes and standards documents from which materials are extracted will continue to address hydrogen in their normal development cycles. The new document (NFPA 2) would go through the normal, formal NFPA document creation and revision processes (including comments periods). Carl estimates that the final version of the first NFPA 2 will be available in the 2008-2009 timeframe.

Carl also reported that the NFPA Hydrogen Coordinating Group held a teleconference meeting on August 23rd.

NFPA Hydrogen Coordinating Group Meeting Minutes (56Kb PDF)

And finally, Carl reported that NFPA has just published a guidebook on gas safety that includes hydrogen:

- The NFPA Guide to Gas Safety, Carl H. Rivkin, Editor, National Fire Protection Association, Quincy, MA, 2005.

Hydrogen-related materials in the Guide include chapters on hydrogen fueling stations and what happens when hydrogen leaks develop.

10.0 REPORT ON ASME/SRNL HYDROGEN PIPING AND PIPELINE WORKSHOPS

ASME and the Savannah River National Laboratory (SRNL) conducted the "Materials and Components for the Hydrogen Economy Codes and Standards Workshop" in Augusta, GA on August 29-30, 2005. The workshop covered:

- Overview of the DOE Hydrogen, Fuel Cell and Infrastructure Technologies Program
- Codes and standards needs for material testing
- Codes and standards for hydrogen service
- Materials testing activities in the national laboratories
- ASME B31.12 Hydrogen Piping Code
- SRNL Materials experience with hydrogen service
- etc.

John Koehr reported that the workshop was a resounding success. The planned number of participants was limited to 65, but several additional persons attended. ASME and SRNL plan to consider having a similar workshop next year.

For information about the Workshop (e.g., copies of the presentations, etc.), contact John Koehr.

Immediately following the ASME/SRNL workshop, the ASME Hydrogen Pipeline Working Group held two days of meetings in Augusta - starting on the afternoon of August 30th and continuing through the 31st. The meetings featured presentations on:

- Hydrogen permeability and integrity of hydrogen transfer pipelines
- Natural gas pipelines for hydrogen use
- Hydrogen materials research
- Pennsylvania Regional Infrastructure Project
- Natural gas utilities options analysis for the hydrogen economy
- Hydrogen pipeline operating experiences and issues - presentations by:
 - Chevron
 - Air Products
 - BP
 - Air Liquide
- etc.

The Working Group conducted two breakout sessions to identify top-priority pipeline delivery needs:

- Group 1: Hydrogen steel pipelines
- Group 2: Hydrogen composite (or non-steel) pipelines

For additional information, contact Louis Hayden, Louis Hayden Consultants

After the Working Group meeting, several members got together to consider how they might be able to discuss materials testing needs and priorities on a more continuing basis. This resulted in their coming up with the concept for a Materials for the Hydrogen Economy Coordinating Group.

[Proposed Concept for the Hydrogen Economy Coordinating Group](#)(57Kb PDF)

The Group would operate mostly via email and teleconferences. Sandia/Livermore has agreed to provide any needed administrative support.

11.0 REPORT ON CODES AND STANDARDS DOCUMENTS IN THE "COMMENTS" PHASE AND UPCOMING EVENTS

[Kelvin Hecht's report on codes and standards documents in the "Comments" stage and upcoming events](#) (128Kb PDF)

12.0 REPORT ON DRAFT CONCEPT FOR EFFECTING COORDINATION BETWEEN THE NATIONAL COORDINATING COMMITTEE AND THE US TAG TEAMS

As a result of the August teleconference meeting, Jim Ohi and Russ Hewett were given the action item to formulate the draft for a concept for attaining effective and efficient coordination between the National

Coordinating Committee and the various US TAG Teams involved in international standards and global technical regulations development activities. The focus is on the following TAG Teams:

- ISO/Technical Committee (TC) 197 (Hydrogen Technologies)
- IEC/TC 105 (Fuel Cell Technologies)
- ISO/TC 118 (Compressors)
- ISO/TC 11 (Boilers and Pressure Vessels)
- ISO/TC 58 (Gas Cylinders)
- ISO/TC 22 (Road Vehicles) SubCommittee 21 (Electric Road Vehicles)
- ISO/TC 220 (Cryogenic Gases)
- ISO/TC 153 (Valves)

Draft concept developed by Jim and Russ (100Kb PDF)

Rather than discuss the draft during the meeting, Russ recommended that Committee members take the time to review and critique it on their own schedules and send their comments to Russ and/or Jim by email. The draft will be placed on the agenda for discussion as part of the October meeting. This was acceptable to the participants.

13.0 REPORTS FROM CDOS AND SDOS ON THEIR ACTIVITIES AS THEY RELATE TO COORDINATION

There were no reports by the various CDOs and SDOs.

Russ Hewett mentioned that he had received a report from Darren Meyers stating that at least one of the ICC's Hydrogen Education Teams had taken the First Responder Awareness Level - Hydrogen Safety course developed and given by the DOE Volpentest HAMMER Training and Education Center in Richland, WA. (HAMMER stands for "Hazardous Materials Management and Emergency Response"). The purpose of their taking the course was to evaluate it and give "open and honest" feedback to HAMMER for use in crafting the final version of the course. When Darren's report is submitted to NREL, Russ will make it available to the Committee.

Kelvin Hecht reported that RABQSA International, which was investigating the feasibility of designing and implementing a Hydrogen Safety Specialist/Hydrogen Safety Officer scheme, had made the decision to discontinue the activity, based on the feedback that they had received.

NEXT MEETING OF THE HC&SCC

The next meeting is scheduled to be the October 2005 Teleconference Meeting as follows:

- DATE: October 5th (First Wednesday)
- TIME: 3:00 - 4:30 pm EDT
- CALL-IN NUMBER - (641) 793-7000 / Pass Code: 824011#

The Agenda will be disseminated with the Final Announcement for the meeting.

Tentatively, the November/December meeting will be an In-Person meeting in conjunction with the USFCC 2005 Fuel Cell Seminar scheduled for November 14-18 in Palm Springs, CA.

Respectfully submitted,

Russ Hewett

ATTACHMENT A

PARTICIPANTS IN THE SEPTEMBER 2005 TELECONFERENCE MEETING OF THE NATIONAL HYDROGEN AND FUEL CELLS CODES AND STANDARDS COORDINATING COMMITTEE

NAME	ORGANIZATION	PRESENT At Meeting? (Yes/No)
Adam Gromis	California Fuel Cell Partnership	N
Algis Vasys	Vista Consulting Group	N
Andrei Tchouvelev	A. V. Tchouvelev & Associates, Inc.	In Pisa, Italy
Antonio Ruiz	USDOE/Hydrogen, Fuel Cell and Infrastructure Technologies Program	Out of Office
Bill Chernicoff	USDOT/Research and Innovative Technologies Administration(RITA)/Washington	N
Bill Collins	UTC Fuel Cells	Y
Bob Mauro	Consultant to NREL	Y
Brad Smith	Shell Hydrogen	N
Brian Walsh	US Fuel Cell Council	N
Bruce Kinzey	Pacific Northwest Laboratory	N
Carl Rivkin	National Fire Protection Association (NFPA)	Y
Cathy Gregoire-Padro	Los Alamos National Laboratory (LANL)	N
Christina Zhang-Tillman	California Fuel Cell Partnership	Y
Christopher Moen	Sandia National Laboratories/Livermore	Y
Dan Casey	Chevron	N
Darren Meyers	International Code Council (ICC)	N
Debbie Angerman	Compressed Gas Association (CGA)	Y
Doug Horne	DBHORNE Technology Management	N
Gary Howard	Stuart Energy Systems	Y
George Earle	Plug Power	Y
George Kervitsky	SENTECH	N
George	Consultant to Sandia	N

Thomas	National Laboratories	
Gerry Myers	SPRINT	N
Greg Milewski	Shell Oil Products	Out of Office
Hank Seiff	Clean Vehicle Education Foundation	Y
Harry Jones	Underwriter Laboratories	N
Holly Thomas	National Renewable Energy Laboratory (NREL)	Y
Jeff Grant	Ballard Generation Systems	N
Jesse Schneider	DaimlerChrysler	In Pisa, Italy
Jim McGetrick	BP	Y
John Koehr	American Society of Mechanical Engineers (ASME)	Y
Juana Williams	NIST	N
Julie Cairns	CSA America	Y
Julie Willets	SPRINT	N
Karen Hall	National Hydrogen Association (NHA)	Y
Keith Hardy	Argonne National Laboratory	N
Kelvin Hecht	ANSI, IEC and Consultant to NREL	Y
Ken Krastins	Plug Power	N
Larry Johnson	SPRINT	N
Laurie Florence	Underwriters Laboratories	Y
Mark Richards	Gas Technology Institute	Y
Michael Steele	General Motors Advanced Technology Vehicles	Y
Patrick Serfass	National Hydrogen Association (NHA)	Y
Pat Davis	USDOE/Hydrogen, Fuel Cell and Infrastructure Technologies Program	In Pisa, Italy
Prentiss Searles	American Petroleum Institute (API)	Out of Office
Robert Wichert	US Fuel Cell Council (USFCC)	N
Roger Smith	Compressed Gas Association (CGA)	N
Ron Sims	Society of Automobile Engineers (SAE) and Consultant to NREL	N

Sondra Ullman	Plug Power	Y
Spencer Grieco	CSA America	N
Steve Turner	C&S Consultant	N
Susan Townsend	General Electric Global Research Center	Y
Ted Williams	American Gas Association (AGA)	N
Terry Conrad	Concurrent Technologies Corp.	Unable to participate
Tom Joseph	Air Products and Chemicals	Y
Tony Androsky	US Fuel Cell Council (USFCC)	N
Jim Ohi	National Renewable Energy Laboratory (NREL)	In Pisa, Italy
Russ Hewett	National Renewable Energy Laboratory (NREL)	Y