

**National Hydrogen and Fuel Cell Codes and Standards Coordinating Committee  
(NHFCCSCC)**

Wednesday, December 5, 2012  
TIME: 3:00 – 4:30 pm (Eastern Daylight Time)

**Minutes**

**Attendees**

Anthony Androsky  
Bill Collins  
Bob Boyd  
Brian Ladds  
Bruce Johnson  
Connor Dolan  
David McCloskey  
David Mikulski  
Ernst Baumgartner

Greg Chirdon  
Larry Moulthrop  
Jesse Schneider  
John Grimes  
Julie Cairns  
Julie Weis  
Karen Hall  
Martin Gresho  
Mike Steele

Nha Nguyen  
Norm Newhouse  
Robert Sale  
Steve Tucky  
Steve Weiner  
Susan Bershad  
Thomas Prevish  
Spencer Quong

**1 Welcome and Housekeeping Items**

**Review of anti-trust guidelines**

[http://www.fchea.org/core/import/PDFs/ANTITRUST\\_GUIDELINES.pdf](http://www.fchea.org/core/import/PDFs/ANTITRUST_GUIDELINES.pdf)

**Review of or corrections to draft meeting agenda**

Agenda approved.

**Review of or corrections to October draft minutes**

October draft minutes approved.

**2 DOE/HQ Update**

Antonio Ruiz

Nha Nguyen – Taking the lead over from Antonio Ruiz

Round robin testing under IPHE, consists of two separate tasks, the first to run hydraulic cycling tests, the second pneumatic cycling tests. The goal is to get harmonized test protocol to be proposed to SAE J2759, the GTR, and other regulations that could benefit from harmonized test protocol. NASA is running test in US side, conducted now. No issue or problems have arisen. Expected to be successful. China is waiting to start the test, they may be making modifications to test set-up. Testing is expected to start this week or next week. A group delegation from US, headed by Antonio Ruiz, will be attending to witness that test in China. Hopefully the tests will be done and a report to IPHE will be issued early next year.

Vote to establish a GTR should begin next year. This process has been on-going for five years.

Jesse Schneider – The industry is looking forward to the GTR getting passed.

Nha – We were hoping it would be ready for vote in November, but we ran into some issues with Japanese concerns on tank pressure, which has delayed the vote by six months. In the next phase, we will come up with a performance based pressure.

Funding – Still in the CR until the end of March. The status is the same. We will keep you updated as further information is available.

### 3 C&S Events and Fuel Cell Safety Information

[http://www.fuelcellstandards.com/calendar\\_new.html](http://www.fuelcellstandards.com/calendar_new.html)

Kelvin Hecht

<http://www.hydrogenandfuelcellsafety.info/meetings.asp>

Karen Hall

Please send an email to Connor Dolan and Kelvin Hecht if you have any events that you would like included on the calendars.

Steve Weiner – Both calendars should identify DOE AMR on May 13 – 17. The next NFPA conference and Expo is on June 10 – 13. Steve and other industry members are giving a presentation on hydrogen safety that week.

Susan Bershad – June 4, 5, 6 NFPA 2 first draft meeting in Quincy at NFPA's headquarters.

Requested to include links in the calendar if available.

ICC code submittal deadline is January 3. ICC code development hearings on April 21 – 28 in Dallas.

### 4 Codes and Standards Organization Updates

#### IEC TC 105

Kelvin Hecht

No updates at this time.

#### ISO TC 197

Jill Thompson

UPDATED December 2012 Update  
ANSI-Accredited U.S. TAG for ISO/TC 197, *Hydrogen technologies*

#### 1. Recent ballots

- ISO/DIS 14687-3, *Hydrogen fuel — Product specification — Part 3: Proton exchange membrane (PEM) fuel cell applications for stationary applications*  
Voting results have not been distributed. The TAG voted "Approve."
- ISO/FDIS 14687-2, *Hydrogen fuel — Product specification — Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles*  
The FDIS was approved. The TAG voted "Approve."
- ISO/DIS 15399, *Gaseous hydrogen — Cylinders and tubes for stationary storage*  
TAG votes were due November 15. The ISO ballot ends on December 27. TAG to discuss position and comments on December 17 (see below)

#### 2. Published International Standards

- ISO 14687-2:2012, *Hydrogen fuel — Product specification — Part 2: Proton exchange membrane (PEM) fuel cell applications for road vehicles*  
This International Standard replaces ISO/TS 14687-2.

- ISO 17268:2012, *Gaseous hydrogen land vehicle refueling connection devices*  
This second edition replaces the first edition, titled "*Compressed hydrogen surface vehicle refueling connection devices*," that was published in 2006.

### 3. Upcoming meetings

- TAG webconference tentatively scheduled for Monday, December 17, from 2:00 PM to 4:00 PM EST, to determine U.S. position (and any comments) on ISO/DIS 15399, *Gaseous hydrogen — Cylinders and tubes for stationary storage*
- Plenary, February 28, 2013, in Montreal  
WG 16, *Basic considerations for the safety of hydrogen systems*, February 26  
WG 17, *Pressure swing adsorption system for hydrogen separation and purification*, February 27

## NFPA

Martin Gresho

The deadline for several key documents is January 4, 2013. The entirety of NFPA 2 and NFPA 853 are up for comment presently. The technical committees will have their meetings by mid-June. This will be the first draft meeting where the committee will act on all input received. The public will then have the option to review these actions, input due November 15, 2013. There are two chances to review and provide input. In the first cycle, everything is on the table. In the second review, only things that were changed will have comment on. The result of that will be the final document.

NFPA 2, we have had many active Task Groups, such as Extract Coordination, that work is largely completed. There is significant effort in regards to refueling, explosions, separation distances, etc. This is in addition to input from the public sector as well.

## ICC

Robert Sale

Bruce Johnson – The ICC process next year. All items are open for change by proposal, due January 3, 2013. A CD will be available by request by April 1 with all code changes proposals. This will prepare for hearings in Dallas. All code change proposals will be heard, the results will be posted on ICC website by May 31, 2013. The second chance to comment will only be able to affect items changed at the Dallas hearings. These comments are due by July 15, 2013. The final action hearings will occur in Atlantic City, New Jersey, October 2 – 9, 2013. Debate is open, participation to all parties. ICC vote is restricted to only government members.

Bob Davidson is under contract with NREL. Prior to dissolution of HIPOC, several code change proposals were developed and submitted as public comments. Bob's task is to take those code change proposals through completion of the current code process.

New York City will be holding public hearings on proposed changes to fire code and building construction code in anticipation of an update in 2013. This will include hydrogen items.

Marty Gresho – With the NYC codes, do you have insight on the content of updates relating to hydrogen? Will additional restrictions be put in place? Will the codes be in line with ICC?

Bruce Johnson – The initial update on NYC codes is based on 2003 codes. At that time they decided to completely restrict hydrogen storage for stationary generators in NYC. It is expected to allow some hydrogen use now in these updates. This should be a step forward from the current restrictions. Right

now there are no hydrogen stations in NYC due to restrictions of the code. They are updating the NYC codes based largely on the 2009 model of codes, though on some issues they are looking ahead to 2012 version. It is expected to pull the 2012 version of codes for hydrogen use.

To the knowledge of the committee, NYC is one of the only cities to restrict the use of hydrogen.

Bill Collins – a list of cities/states with their own model codes would be beneficial to the committee.

## **CSA**

Julie Weis

CSA's presentation available online at:

[www.fchea.org/core/import/CSA-Group-Update-2012-11-28.pdf](http://www.fchea.org/core/import/CSA-Group-Update-2012-11-28.pdf)

## **HDTA Status Update**

Ken Loewenthal

Steve Tucky – Ken is in meetings and will provide an update at the next meeting.

Jesse Schneider - The solicitation in California from the California Energy Commission officially recognizes CSA 4.3 to certify dispensers.

## **UL**

Laurie Florence

No updates at this time.

## **SAE**

Mike Steele  
Jesse Schneider

SAE's presentation is available online at:

<http://www.fchea.org/core/import/SAE-FCSC-12-2012.pdf>

Jesse Schneider – J2601 has a lot of updates. Spencer Quong and Toyota have announced validation of models to create tables in a future standard. The timeline of voting is March 2013. There is currently interim results that indicate the models previously used were in need of an update. They did not correlate to the values. The discrepancies found are now understood for the simulation. It is expected that the simulation will be done by next meeting. Perhaps an interim presentation will be available next time.

## **ASTM**

Tommy Rockward

No updates at this time.

## **5 Discussion Topics**

### **Regulatory Matrix Review and Comment**

Karen Hall

<http://www.fchea.org/core/import/PDFs/FCHEA-Regulatory-Matrix-11-14-2012.pdf>

### **Permitting and Installation of Hydrogen Fueling Stations**

Ca FCP Station Implementation Team

Jennifer Hamilton

The most significant news is that the CEC released the latest PON (Program Opportunity Notice) for Hydrogen Fueling Infrastructure: <http://www.energy.ca.gov/contracts/transportation.html#PON-12-606>. Funding is up to \$28.59M; it also references SAE J2601 and CSA HGV 4.3 in the Minimal Technical Requirements section.

The Station Implementation calls are now monthly Working Group calls (schedule TBD).

Ca DMS Metrology Norman Ingram

No updates at this time.

Ca DMS Fuel Quality Ron Nies

No updates at this time.

SAE TIR J2601 Compliance Jesse Schneider

No updates at this time.

### **Hydrogen Fuel Quality and Measurement**

NIST Juana Williams & Marc Buttler

## **(1) U.S. Weights and Measures Standards Development Process**

### ***Device Test Procedures Update***

#### **Field Trials of Hydrogen Dispenser Test Apparatus**

NIST OWM is planning to conduct field trials of gravimetric and alternative test methods to collect additional data that is needed to refine uncertainty analyses of these test methods. Procurement of some of the necessary equipment has proven to be challenging, and NIST would appreciate any information regarding potential sources of suppliers that could provide fully assembled tanks with fittings necessary for use in gravimetric testing that are capable of meeting the following specifications:

Tank:

- Type: High-pressure Type IV
- Capacity: 5 kg of hydrogen at service pressure
- Service pressure 70 MPa

The tank should be mounted on a lightweight support framework to rest within the dimensions of the reference scale platform of 600 x 800 mm (24 inch x 32 inch).

The weight of the tank (with self-contained fittings, support rack etc.) filled with 5 kg of hydrogen must not exceed 150 kilograms (300 lb).

- Type IV (carbon fiber-resin (CF) composite-wrapped single tank system, with a high density polyethylene (HDPE) liner)
- Approximate empty weight of tank: 100 kilogram (200 lb)
- Approximate dimensions: 39 cm (16.5 inch) diameter; Length: 163 cm (64 in)
- Operating temperature range of -40 °C to 82 °C.

Certified to: European Integrated Hydrogen Project (EIHP)/Rev 12 B; ISO 15869 “Gaseous Hydrogen Blends & Hydrogen Fuels - Land Vehicles Fuel Tanks “; FMVSS 304 “Compressed Natural Gas Fuel Container Integrity “; Reijikijun Betten 9; SAE J2579 “Technical Information Report for Fuel Systems in Fuel Cell and Other Hydrogen Vehicles”; CSA HGV2 “Standard Hydrogen Vehicle Fuel Containers

Fittings:

- primary pressure regulator with safety release
- manual vent release valve
- manual 3-way tank inlet control valve with fill and vent ports
- quick-disconnect fill and vent tubes/input port compatible with nozzles on retail hydrogen gas fuel dispensers equipped with input check valve
- Precision-analog pressure gauge
- temperature sensor and intrinsically safe handheld digital readout
- grounding cable

Certified to: CSA HPRD1 “Standards for Basic Requirements for Pressure Relief Devices for Compressed Hydrogen Vehicle Fuel Containers

## **(2) International Hydrogen Device Standards**

### ***OIML R 139 “Compressed gaseous fuel measuring systems for vehicles”***

NIST OWM participated in a November 8-9, 2012 working group meeting held in Delft, the Netherlands. The meeting was held to discuss complex TC8/SC7 comments on the first committee draft of OIML R 139 that were submitted in August 2012. Due to time constraints at the meeting comments were prioritized by level of importance and complexity. The Secretariat for R139 has indicated that the comments not covered at the meeting will be worked through by email by yearend.

Please contact Marc Buttler by email at: [marc.buttler@nist.gov](mailto:marc.buttler@nist.gov) , if you wish to discuss field test procedures or Juana Williams by email at: [juana.williams@nist.gov](mailto:juana.williams@nist.gov) to discuss international hydrogen device standards.

## **6 Open Discussion & Other Issues**

Any topics that should have been covered?

A notice will be added at the beginning of future calls to not put the conference call on hold.

**Next meeting:** January 9, 2013 at 3:00 PM Eastern