

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

**Wednesday, December 10, 2014  
TIME: 3:00 – 4:30 pm (Eastern Daylight Time)**

**Minutes**

**Attendees**

Aaron Harris  
Connor Dolan  
Jay Keller  
Jennifer Hamilton  
Jesse Schneider  
John Grimes

Juana Williams  
Julie Weis  
Karen Hall  
Kelvin Hecht  
Kevin Schnepf  
Marcia Poxson

Mike Steele  
Nick Barilo  
Robert Boyd  
Steven Yip  
Susan Bershad  
Will James

**I. Welcome and Housekeeping Items**

- Reviewed anti-trust guidelines - [http://www.fchea.org/core/import/PDFs/ANTITRUST\\_GUIDELINES.pdf](http://www.fchea.org/core/import/PDFs/ANTITRUST_GUIDELINES.pdf).
- Reviewed the meeting agenda.
- Approved November 19 draft minutes.

**II. DOE/HQ Update**

**Will James**

A new fellow is supporting the DOE program, Laura Hill.

**III. 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**

**Action Item:** Update/Correct DC Auto Show, SAE Meetings (March), and DOE AMR.

**Request:** technical resource updates for the Hydrogen and Fuel Cell Safety website. Any committee members who have materials they would like hosted on the website can send them to Karen Hall ([khall@fchea.org](mailto:khall@fchea.org)) or Connor Dolan ([cdolan@fchea.org](mailto:cdolan@fchea.org)).

**IV. Global Technical Regulations**

**Nha Nguyen**

No update at this time.

**V. Codes and Standards Organization Updates**

**IEC TC 105**

**Kelvin Hecht**

No change from last meeting.

The active working groups and plenary took place last week (week of December 1, 2014) in Fukuoka Japan. 10 countries represented at Plenary. A couple of issues came up which will be reported in the January edition of the Hydrogen and Fuel Cell Safety Report ( [www.hydrogenandfuelcellsafety.info](http://www.hydrogenandfuelcellsafety.info)).

A couple of new NWIPs were discussed. Electrolyzer standard (Larry Moulthrop, US Convener). General support in updating residential applications standard. Some consideration of combining residential and industrial into single document. Weighing pros and cons. A report on the discussion will be provided to Larry before official voting period.


French NWIP to update ISO 16111 on transport of hydride containers. UN model regulation references this document, regarding transport of micro/portable fuel cells systems onboard aircraft. Concerns were raised by the US, Canada, and Japan on the impact of this on the UN Model Regulations on portable fuel cell systems. This NWIP is largely due to a need for a standard to cover larger systems >150 liters. France is proposing to expand the scope to 3,000 liters. Responses are due at the end of January. Active discussions ongoing.

Karen Hall convened working groups 21, 22, and 23 on compressors, fittings and hoses. Working to develop product in 2 years. Seed documents from CSA through a copyright agreement with ISO are providing a great starting point.

WG 24 – Stations – Met for 2 days. Next meeting in February in Frankfurt. Finishing TR in June 2015, final product in December 2016.

Jesse Schneider shared several slides from a recent ISO presentation with further information on recent and planned ISO activities. The presentation is available online at <http://www.fchea.org/s/TC-197>. Two primary slides of relevance to the NHFCCSCC are copied below.

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## 2015

### ISO 19880-1 F2F Schedule

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- **February 16-20<sup>th</sup>, 2015 at Shell in Hamburg, Germany**
  - **Main WG 24 Meeting**, Review Comments and Finalize DTR (Draft Technical Report)
  - Preparation Risk Assessment at Shell Hamburg, Germany
- **April 13-17<sup>th</sup>, 2015- at Linde in Munich, Germany**
  - Kickoff WG24 sub group risk assessment
  - **Main WG 24 Meeting** Start of TR to IS Discussions “Should vs. Shall”
- **June 22-26<sup>th</sup>, 2015 at AFNOR, Paris, France**
  - **Main WG 24 Meeting** Start of TR to IS Discussions “Should vs. Shall”
  - WG 24 Development of DIS/ Discussion with CEN
  - Meeting with ASTM
- **October 12-16<sup>th</sup> in Japan (Fly to Tokyo, Location TBD)**
  - **Main WG 24 Meeting** Developing Draft CD 19880-2
  - WG24 sub group station acceptance, hydrogen quality and risk assessment
- **December 7-11<sup>th</sup>, 2015, ISO TC 197, Plenary in LA, USA? (TBC)**
  - Main WG 24 Meeting to discuss final comments before CD

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## Station Acceptance Testing Device Guidelines

- On-site "Field test" before normal operation of station
- periodic - e.g. every year for verification of safety relevant PLC



	HRS performance	Hydrogen Gas Quality	Particle Mesurement	Mass Transfer Measurement
Existing Standard	No, Guidelines	Yes (ASTM)	Yes (ASTM)	No, Guidelines
Goal to test or verify (parameter)	p, T in vehicle tank	To collect sample gas	Particle identification	Verification of mass transfer
Safety relevant for interface HRS-FCHV	<b>YES</b>	No	Yes	Yes
min. requirement = part of ch. 12	<b>YES</b>	<b>YES</b>	<b>YES</b>	<b>YES</b>

### **NFPA 2**

**Martin Gresho/ Susan Bershad**

Ballot for NFPA 2 just went out today. Two week turn around. Due on midnight of December 24, 2014. Will recirculate the week of the 30<sup>th</sup> for one week.

The Joint Informational Ballot (NFPA 55 extractions into NFPA 2) also was sent out today. Both are due at the same time.

Any questions can be sent to Susan Bershad at [sbershad@nfpa.org](mailto:sbershad@nfpa.org).

### **NFPA 853**

**Karen Hall**

No report at this time.

### **ICC**

**Robert Sale / Bob Davidson**

No report at this time.

### **CSA**

**Julie Weis**

CSA's presentation is available online at <http://www.fchea.org/s/CSA-Group-Update-12-3-2014>.

### **UL**

**Laurie Florence**

Karen Hall will contact UL for a report in Q1 2015.

### **SAE**

**Mike Steele / Tim McGuire**

SAE J2600 out for ballot this morning. 28 day ballot. Ends January 6<sup>th</sup>.

Jesse Schneider – March 9<sup>th</sup> will be a materials compatibility workshop to support safety working group 2579. The workshop will be creating a testing plan and materials suggestion to confirm hydrogen compatibility. NHFCCSCC members can contact Glen Scheffler for more information.

## **ASTM**

**Tommy Rockwood**

Karen Hall will amend ASTM updates received from Tommy Rockwood via email for updating specific items in the Regulatory Matrix. These will be reviewed next month after all the revisions are incorporated.

## **ASME**

**John Grimes**

ASME Hydrogen Code and Standards development and revised releases  
Piping and Pipelines:

1. B31.12-2011 Hydrogen Piping and Pipelines

Revised **B31.12-2014** to be published by the end of January, 2015 to supersede B31.12-2011.

Some of the significant revisions do the following:

1. Adds a new statement to specify which figure should be used for determining equal component thicknesses to paragraph GR-3.4.3(d).
2. Establishes a reference and criteria for demonstrating the adequacy of mechanical strength In paragraph IP-3.1.
3. Establishes a reference and criteria for thermowell design in paragraph IP-8.2.2,
4. Adds Rockwell 15N Max values to Hardness Testing Acceptance Criteria table.
5. Adds Vickers HV Max. Hardness and Rockwell 15N Max. Hardness values to Hardness Testing Acceptance Criteria for Weldments table (IP-10.4.3-2).
6. Notes that adequate ventilation is a normal practice and is sometimes required in some jurisdictions in new paragraph under paragraph A-1.

Other revised ASME Standards that support hydrogen infrastructure that were published in 2014.

2. B31.1-2014 Power Piping
3. B31.8-2014 Gas Transmission and Distribution Piping Systems
4. B31.8S-2014 Managing System Integrity of Gas Pipelines

Other items:

The Nonmetallic Materials Subcommittee (SC-NMM) of the ASME Nonmetallic Pressure Piping Systems Committee has started an effort to identify the needed nonmetallic materials for ASME B31.12 Hydrogen Piping and Pipelines and to acquire the materials properties and test data from existing sources or future research for materials approval.

Kelvin Hecht – Will new edition of B31-12 include smaller applications? Or only focused on industrial piping?

John Grimes – Will report back at a later date.

## VI. Discussion Topics

### Facilitating Deployment

Carl Rivkin

Carl has been working with Jennifer and others on permitting workshops.

Jennifer Hamilton – We held a permitting workshop in Hayward yesterday. 49 attendees. Very well received. Lots of questions and discussions. Lots of specific questions on inspection /recording keeping / listing and labeling. Already been some projects landing on folks desks for stations that have been funded in the Bay Area. Requests for first responder training also received. PDFs of the presentations will be available on the CAFCP website.

Some folks came with copies of the state fire marshal notice on NFPA 2. Vehicle repair facilities discussed.

### H<sub>2</sub>USA Activities

Karen Hall

Joint Task Force for Regulations Codes and Standards meeting on Friday. Getting our arms around various activities in terms of permitting / first responders / restrictions for tunnels and bridges. Also focusing on cycles for state code cycles. Will be talking about activities for possible technical discrepancies. Members of H2USA interested in the Task Force can contact Karen Hall at [khall@fchea.org](mailto:khall@fchea.org). If interested in joining H2USA, contact Connor Dolan at [cdolan@fchea.org](mailto:cdolan@fchea.org).

H2USA held an All Hands meeting at the Fuel Cell Seminar in November.

The public website URL for H2USA is [www.h2usa.org](http://www.h2usa.org).

Volkswagen is the latest participant of H<sub>2</sub>USA.

### H2FIRST

NREL/SNL

H2FIRST – joint research venture between NREL and SNL.

The HySTEP device is working forward. Picked a supplier (Powertech). Plan on building the device and having a functional version by Fall for testing in California. Questions can be sent to Terry Johnson at SNL. HySTEP is testing to SAE J2601 hydrogen refueling standard.

### Regulatory Matrix Review and Comment

Karen Hall

The latest version of the Regulatory Affairs Matrix is available online [here](#).

Comments can be submitted to Karen Hall at [khall@fchea.org](mailto:khall@fchea.org).

A revised version of the matrix will be shared in January.

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

### **Ca Station Implementation**

**Jennifer Hamilton**

Ribbon cutting for the West Sacramento HRS station was held this morning. FCEVs were there from Toyota (Mirai), Nissan, Mercedes-Benz. Commissioner Scott from CEC spoke. Linde executives were there. The Mayor Pro Temp from West Sacramento also attended.

### **Ca DMS Fuel Quality / Metrology**

**Kevin Schnepf**

No updates on the Fuel Quality side. Fully established and functioning lab. Need for further testing not yet established.

Metrology – permanence testing held at West Sacramento station. Both of the stations are set for permanence testing, once successful testing occurs, will be given approval for use throughout the state. On-going tests of new dispensers will begin in January.

Several stations this month, January, February, and March planned for additional testing.

Kevin clarified that any device for fuel has a listing on the pump for accuracy and performance. Any device needs a type approval. Permanence testing re-evaluates testing for continued accuracy. Once this is approved, allows use throughout the state. This Permanence testing is done on a type of design.

Temporary use permits are issued after successful testing. Maintenance and tolerance criteria testing is performed on an annual basis. There is no set frequency for field studies. Traditional fuels have routine field studies for testing an appliance. This testing will be the responsibility of DMS until the counties have the equipment and training.

The Gravimetric method is the only one that met the statistical requirements.

### **SAE J2601 Compliance**

**Jesse Schneider**

In Japan, a meeting on JPEC and the Japanese government. The SAE J2601 has officially been adopted into law for all hydrogen stations in Japan to meet the tables-based approach. The Japanese government considers this a safety topic.

### **Legal Metrology Standards Hydrogen Fuel Quality and Measurement**

**Juana Williams**

No report at this time.

## **VIII. Open Discussion & Other Issues**

METI Announcement – On-going actions of Japan to reduce cost of hydrogen infrastructure. Revamping their regulations, codes, and standards.

***Japan to relax overly tight restrictions on hydrogen stations to make them cheaper to build – Japan Times***

<http://www.japantimes.co.jp/news/2014/12/10/business/japan-relax-overly-tight-restrictions-hydrogen-stations-make-cheaper-build/#.VlhcWvnF-Ck>

**Next meeting:** Wednesday, January 7, 2015 at 3:00 PM Eastern.