

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

**Wednesday, January 3, 2018  
TIME: 3:00 – 4:00 pm (Eastern Standard Time)**

**Minutes**

**Attendees**

Justin Lewis  
Jay Keller  
Juana Williams  
Karen Quackenbush  
Kelvin Hecht  
Mike Steele  
Laura Hill

Norm Newhouse  
Bob Davidson  
Susan Bershad  
Will James  
Nick Barilo  
Elan Bond  
Jennifer Hamilton

Greg Chirdon  
Bob Boyd  
Stella Papasavva  
Aaron Harris  
Eric Nelson  
Amy Ryan  
Ralph Richter

**I. Welcome and Housekeeping Items**

- Reviewed FCHEA's anti-trust guidelines - Available on FCHEA's members only website and a copy can be provided to you on request.
- Approved the meeting agenda
- Approved the previous meeting minutes for November 2017

**II. DOE/HQ Update**

**Will James, Laura Hill**

Under a continuing resolution through January 19.

The Codes and Standards program received their first R&D 100 award this past year.

Will James is transitioning permanently to the DOE Vehicle Technologies Office to support the battery R&D program.

The C&S leadership will be transitioned and more specifics will be available in the coming weeks.

**III. C&S Events and Fuel Cell Safety Information**

<http://www.fuelcellstandards.com/note.html>

**Kelvin Hecht**

This website will no longer be supported by DOE. Kelvin has received inquiries from many groups regarding the standards and is working to answer questions as they come up.

<http://www.hydrogenandfuelcellsafety.info/events/>

**Karen Quackenbush**

**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 Quackenbush ([khall@fchea.org](mailto:khall@fchea.org)) or Connor Dolan ([cdolan@fchea.org](mailto:cdolan@fchea.org)).

#### IV. Global Technical Regulations

Nha Nguyen

Nha has provided the website for where documents can be accessed online. When these documents are available they will be on the UNEC website.

There will be a meeting on February 5-7 at Toyota in Torrance, California.

#### V. Codes and Standards Organization Updates

##### IEC TC 105

Kelvin Hecht

##### Working Group 2 (Fuel Cells Modules)

- Request experts to participate more actively (attending meetings or providing comments) or be removed from activity
- IEC 62282-2-201 (Performance) granted extension for CD until 4/28/2018 and publication in 2020

##### Working Group 3 (Stationary Fuel Cells – Safety)

- CDV posted for vote and comments
- I (Kelvin) assume that the US TAG will vote to approve, but now is the time (before the end of January) to comment to “tweak” items so that they can be addressed by the working group.

##### Working Group 5 (Stationary Fuel Cells – Installation)

- Amendment of IEC 62282-3-300 shall begin in the Spring of 2018 with publication in 2020.

##### Working Group 8 (Micro Fuel Cells – Safety)

- Only one Part 2, for methanol, associated with IEC 62282-6-101 will be created at this time

##### Working Group 9 (Micro Fuel Cells – Performance)

- Extended target date for IEC 62282-6-200 Ed.3 to 2021.

##### Working Group 10(Micro Fuel Cells – Interchangeability)

- Extended target date for IEC 62282-6-300 Ed.2 (Fuel Cartridges) to 2021.
- Extended target date for IEC 62282-6-400 Ed.1 (Power and Data) to 12/2018.

##### Working Group 11(Single Cell Test Methods)

- Next edition to IEC TS 62282-7-1 (PEM) will commence in late 2019.
- Extended target date for next edition of IEC TS 62282-7-2 (Solid Oxide) to 2020

##### Working Group 13(Energy Storage – Reversible/Regenerative Fuel Cells)

- Extended target date for IEC 62282-8-101 (Solid Oxide Single Cell Performance) to 2/2018.
- Extended target date for IEC 62282-8-102 (PEM Single Cell Performance) to 2/2018.
- Extended target date for IEC 62282-8-201 (Power to Power Performance)

**ISO/TC 197****Karen Quackenbush/ Glenn Scheffler/Jay Keller**

WG 22 (Hoses) Circulation of Draft International Standard expected soon.

WG 24 (Stations) – Went to DIS. Scheduling a meeting in late spring / early summer to resolve any and all comments.

Karen will be taking reports from the plenary which will be published in the Safety Report later this month. [www.hydrogenandfuelcellsafety.info](http://www.hydrogenandfuelcellsafety.info).

More specific status on these working groups will be available next month.

**NFPA 2****Carl Rivkin**

Susan Bershad – Ballots for NFPA 2 should be out next week. The ballot will be out for two weeks and will be recirculated for one week.

**ICC****Spencer Quong**

Bob Boyd – The proposals have to be in by next week on January 8<sup>th</sup>.

Between various entities have minor things up for the codes such as definitions for automotive fuel tanks, some additional language on nozzles to maintain correlation with NFPA 2, other addition to NFPA 2 include pointers for fuel dispensing, we are looking at adjusting protections (getting rid of the Nitrogen purge), improper application for outdoor hydrogen storage associated with fueling operations.

In the overall scheme of things, this year it is a bit less extensive than in the past, more focus is on fine tune work and less overall changes.

**CSA****Brent Hartman**

Greg Chirdon – no update at this time.

**SAE****Mike Steele**

Scheduled to have meetings in February. Initially the Safety WG was going to skip the February meetings, however due to popular demand the meeting is being reinitiated. The Safety meeting will likely be on the 18<sup>th</sup> in California.

The ITF is considering meeting at the same time as some of the other ISO working groups, no confirmed details now.

For the rest of the year, events/meeting timing is still TBD.

**ASTM****Jennifer Hamilton**

D7550 Test Method for Determination of Ammonium, Alkali and Alkaline Earth Metals in Hydrogen and Other Cell Feed Gases by Ion Chromatography – withdrawn, no replacement (meaning it can still be cited but it's taken out of the revision/renewal rotation)- no one really uses it, including JARI

D7606 Practice for Sampling of High Pressure Hydrogen and Related Fuel Cell Feed Gases and

D7651 Test Method for Gravimetric Measurement of Particulate Concentration of Hydrogen Fuel were both revised and renewed as of November 1, 2017

WK 48876 [New Test Method for Determination of Weight of Hydrogen Fuel Dispensed from Hydrogen Fueling Station](#)- the technical lead is working with CA Division of Weights and Measures on this

D7653-2010 Test Method for Determination of Trace Gaseous Contaminants in Hydrogen Fuel by Fourier Transform Infrared (FTIR) Spectroscopy – while this document is currently being revised, the ILS for it (#851) will proceed as there are no technical changes to the procedure

D7652-2011 Test Method for Determination of Trace Hydrogen Sulfide, Carbonyl Sulfide, Methyl Mercaptan, Carbon Disulfide and Total Sulfur in Hydrogen Fuel by Gas Chromatography and Sulfur Chemiluminescence Detection – submitted to the committee for renewal as is on Dec. 11, 2017

D7650-2013 Test Method for Sampling of Particulate Matter in High Pressure Hydrogen used as a Gaseous Fuel with an In-Stream Filter - under revision

WK23815 New Standard 'Standard Screening Method for Organic Halides Contained in Hydrogen or other Gaseous Fuels' – this is still in development and will be balloted later this year (this was the item in question by Mike Steele- it is a screening method which cites the full procedure, ASTM D7892-15 Standard Test Method for Determination of total Organic Halides, total Non-Methane Hydrocarbons, and Formaldehyde in Hydrogen Fuel by Gas Chromatography/Mass Spectrometry)

**ASME**

**John Bendo**

No report at this time.

## **VI. Discussion Topics**

### **Facilitating Deployment**

**Carl Rivkin**

Jennifer Hamilton – the Energy Commission and ARB has issued a joint staff report on AB 8 on the cost share of the stations.

<http://www.energy.ca.gov/2017publications/CEC-600-2017-011/CEC-600-2017-011.pdf>

First responder train the trainer is being planned in the Northeast for March. We have state solidified for Massachusetts and Connecticut. We are working on Hempstead still.

The training program being developed with Nick Barillo and Jennifer will be available online at h2tools once complete.

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

**Karen Quackenbush**

Efforts are underway to define priorities for 2018, which are likely to include more collaboration on safety, codes & standards activities relating to hydrogen fueling stations, including component reliability.

## **H2FIRST**

**NREL/SNL**

No update at this time.

## **H2@Scale**

Another H2@Scale workshop will be held in April.

## **Regulatory Matrix Review and Comment**

**Karen Quackenbush**

<http://www.fchea.org/s/FCHEA-Regulatory-Matrix-markup-September-30-2017.pdf>

A new version will be available for the next meeting.

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

### **CA Station Implementation**

**Jennifer Hamilton**

Currently at 31 open retail stations and 3 open non-retail stations.

[https://cafcp.org/sites/default/files/h2\\_station\\_list.pdf](https://cafcp.org/sites/default/files/h2_station_list.pdf)

As of the end of 2017, there were 3,234 FCVs on the road in California.

[https://cafcp.org/sites/default/files/FCEV%20SALES%20TRACKING%202015-17\\_Totals.pdf](https://cafcp.org/sites/default/files/FCEV%20SALES%20TRACKING%202015-17_Totals.pdf)

### **CA DMS Fuel Quality / Metrology**

**Kevin Schnepf**

No update at this time.

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

**Juana Williams/Ralph Richter**

Ralph Richter provided an update on the revision to OIML R139. This OIML Recommendation provides the international technical requirements and testing procedures (this corresponds to the domestic hydrogen code that is found in NIST Handbook 44).

We now have [second](#) committee draft (2CD) of the revision to OIML R139 that was last published in 2014. The document is entitled “Compressed gaseous fuel measuring systems for vehicles,” and was originally focused on fueling systems for compressed natural gas (CNG). This revision cycle is now focused on expanding the application of the recommendation to hydrogen systems. Japan and the Netherlands are the Co-conveners of this revision project, and Ralph is providing the US representation on the project group. Ralph needs assistance on how to best get this group to review the document and send comments back to him.

Ralph needs comments on R139 (2CD) returned to him by 09 Feb 2018, and then he will send all US comments to the conveners by Feb 25<sup>th</sup>.

Major changes in the document – two new MPEs for hydrogen systems (accuracy classes that are significantly higher than those for CNG systems). Minimal measured quantity is 1 kilogram. The durability test was revised so that now only meters with moving parts need to be tested. Sections of the R139 testing procedures were re-written to make to make them applicable specifically to hydrogen systems.

Anyone interested in participating in this [effort](#) can contact Ralph or Juana for more details.

Bob Boyd – were you able to get a lot of the work that we did in Handbook 44 brought into this edition of the OIML?

Ralph – you will be able to see what is in and not in there. It is not exactly the way we do things in handbook 44, hopefully it will work out for the stakeholders.

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

### **Other Issues?**

## **VIII. Next Meeting**

The GTR Phase two meeting is scheduled to meet on February 7<sup>th</sup>, in light of this, we will move our next NHFCCSCC meeting to a week earlier on Wednesday, January 31<sup>st</sup>.