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

Wednesday, August 5, 2020
TIME: 2:00 – 3:00 pm (Eastern Standard Time)

Minutes

Attendees

Chris LaFleur
Connor Dolan
Eric Prause
Jay Keller
Jennifer Gangi
John Eihusen
Juana Williams
Laura Hill
Mike Steele
Morry Markowitz
Nick Barilo
Norman Newhouse
Owen Hopkins
Christine Watson
Bob Boyd
Spencer Quong
Jennifer Hamilton
Quailan Homann
Rob Early
Sara Marxen
Tommy Rockwood
Stella Papasavva

I. Welcome and Housekeeping Items

- The Committee reviewed FCHEA's anti-trust guidelines - Available on FCHEA's members only website and a copy can be provided to you on request
- The Committee reviewed the agenda.
- The Committee approved the previous meeting minutes.

II. DOE/HQ Update — Laura Hill

There is an open lab H2@Scale CRADA call being distributed through NREL (see previous meeting minutes for a link / details). The deadline has been extended through August 14th.

DOE is operating in Phase II of its opening. Most staff continue working from home.

III. Codes &Standards Events and Fuel Cell Safety Information

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) or Connor Dolan (cdolan@fchea.org).

The September AICHE Center for Hydrogen Safety Conference will run for across a few days (virtually) – need to update dates/times. Presentations will all be recorded and available later on.

The European CHS conference will also need to be updated as well.

The HySafe Research Priorities Workshop (RPW) was intended to be held in conjunction with the European CHS conference originally. The meeting will now be held virtually the following week and spread across several days. The agenda for the meeting is still being developed.

IV. Global Technical Regulations — Ian MacIntire

There are no significant updates for GTR-13. The GTR-13 task forces are doing what they can remotely.

Jay Keller – Task IV document (Fire Testing Protocol) is moving along nicely with increasing consensus. Recently had a curveball and are regrouping a little bit with some rewrites. Once completed will have consensus once again. Just making the document a bit more simple.

V. Codes and Standards Organization Updates

International Electrotechnical Commission IEC TC 105 — Kelvin Hecht

Committee Drafts posted for comments by Sept. 25

- IEC 62282-6-101
  Micro Fuel Cell Power Systems – Safety – General Requirements
  [not fuel specific requirements]

- IEC 62282-6-106
  Micro Fuel Cell Power Systems – Safety – Indirect Class 8 (corrosive) Compounds
  [using Hydrogen produced from corrosive (UN Class 8) formulations of borohydride compounds]

- IEC 62282-6-107
  Micro Fuel Cell Power Systems – Safety – Indirect Water-Reactive (Division 4.3) Compounds
  [using Hydrogen produced from water-reactive (Division 4.3) compounds]

2020 Plenary (virtual)
- Nov. 19 3 hours
- Nov. 20 3 hours

International Standards Organization ISO/TC 197 — Karen Quackenbush/Jay Keller

Jay Keller – The -1 fueling station document has been published. Has hence freed up other 19880 documents to move forward.

The NWIP for refitting tanks is moving ahead. This is an activity that the community has been working on for quite some time. With the previous failed FDIS, ISO has reconstituted this group with new leadership and a new working group with the hope that it can move forward with success. The leads are from Japan and the US.

The general safety requirements (WG 29) has received first round of comments and will be incorporated into the document and sent out for a second round of review.

The NWIP for heavy-duty fueling (high flow rate) has a working leadership package and assembling a team. Jay is the technical program director for this topic and it is moving forward to the US TAG. Will work to provide a draft in advance to those with a vested interest.

National Fire Protection Association NFPA 2 **Chris LaFleur**

All the PIs submitted in June have been compiled. There are 220 total proposals. This is significantly less than the 400 received in the last cycle. At some point will be scheduling a Fall meeting, which will be a series of three-hour meetings to go through all of the PIs.

Will send the PIs that are grouped and fit into existing task forces in advance so that they can be reviewed and a recommendation can be provided.

International Codes Council (ICC) **Spencer Quong**

The International Fire Code action committee that reviews big proposals in advance to get consensus has been meeting. Have reviewed a few hydrogen topics including mobile hydrogen fueling, energy storage, and public events. The mobile hydrogen refueling is geared towards on demand fueling at a parking lot / business.

CSA Group **Sara Marxen/Brent Hartman**

Active Projects

- **CSA HGV 4.4 TSC** *Breakaway Devices and Valves* – continues to work on an adoption of ISO 19880-3 (*Valves Standard*) with North American Deviations. Draft document is out for industry/public review. Public Review closes. Access by clicking here: https://publicreview.csa.ca/Home/Details/3894. Next meeting of the TSC is scheduled for August 18.
- **HGV 4.10 TSC** *Fittings* – Public Review period closed late June. All comments have been dispositioned by the TSC. Document is being prepared for Technical Committee Ballot.
- **HGV 2** *Containers* – Draft document is out for industry / public review. Public Review closed late July. Next meeting of the TSC is scheduled for August 13 to review comments.
- **HPRD 1** *Thermally activated pressure relief devices* – Content development is completed. Expect draft document for Industry/Public Review posted soon.
- **HGV 4.3** *Fueling parameter evaluation* – TSC continues to meet to discuss inclusion of Protocol Factory Acceptance and Periodic Maintenance Testing in the next edition. Next meeting of the TSC is scheduled for August 4, 2020.
- **HGV 4.2** *Hoses for compressed hydrogen fueling dispensing* – A project kickoff meeting was held in late July. TSC meeting schedule will be reviewed at August 4 meeting.
- **FC 1** *Stationary fuel cell power systems* – Content development for the adoption of IEC 62282-3-100 continues. As the administrator of both the US TAG and SCC MC to IEC TC 105 (fuel cells), CSA continues to host a binational meetings via teleconference, as needed, to discuss open IEC TC 105 action items. Anyone interested in participating, please contact mark.duda@csagroup.org.

Projects Launching Soon

- **HGV 5.X** – *Hydrogen Refueling Appliances*
- **HGV 3.1** – *Fuel system components for compressed hydrogen gas powered vehicles*

Society of Automotive Engineers (SAE) **Mike Steele**

The two documents that are being worked on are J2600 and J2601-4. -4 group is holding calls regularly every four weeks.

There is some work with GTR-13 which will have an impact on 2578 and 2579.

Compressed Gas Association (CGA) **Rob Early**

Status of current and future publications:

Standard	Current edition	Status
CGA G-5, *Hydrogen*	8th (2017)	Deadline to submit proposed changes for next edition is 7/7/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-019
CGA G-5.3, *Commodity specification for hydrogen*	7th (2017)	Deadline to submit proposed changes for next edition is 6/4/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-013
CGA G-5.4, *Standard for hydrogen piping systems at user locations*	6th (2019)	Deadline to submit proposed changes for next edition is 12/22/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-54
CGA G-5.5, *Hydrogen vent systems*	3rd (2014)	Next step for 4th edition is review by CGA Standards Council. Heat radiation testing will take place late October at Chart Industries in New Prague, MN.
CGA G-5.6, *Hydrogen pipeline systems*	1st (2005 – reaffirmed 2013)	Deadline to submit proposed changes for next edition is 8/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=19-018
CGA H-1, *Service conditions for portable, reversible metal hydride systems*	2nd (2011)	Deadline to submit proposed changes for next edition is 2/3/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-033
CGA H-2, *Guideline for classification and labeling of hydrogen storage systems with hydrogen absorbed in reversible metal hydrides*	2nd (2018)	Deadline to submit proposed changes for next edition is 6/4/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-012
CGA H-3, *Standard for cryogenic hydrogen storage*	3rd (2019)	Deadline to submit proposed changes for next edition is 12/1/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-036

Standard	Current edition	Status
CGA H-4, *Terminology associated with hydrogen fuel technologies*	3rd (2020)	Deadline to submit proposed changes for next edition is 12/1/2024. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=24-59
ANSI/CGA H-5, *Standard for bulk hydrogen supply systems*	2nd (2014)	The 3rd edition has been approved by CGA Standards Council. The next step is circulation for public comments because this is an ANSI standard. You can use this link to submit comments: https://www.cganet.com/cga-h-5-public-comment-period-2020-now-open-revision-of-ansi-cga-h-5-2014/
CGA H-10, *Combustion safety for steam reformer operation*	2nd (2018)	Deadline to submit proposed changes for next edition is 12/1/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-038
CGA H-11, *Safe start-up and shutdown practices for steam reformers*	2nd (2020)	Deadline to submit proposed changes for next edition is 8/11/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-30
CGA H-12, *Mechanical integrity of syngas outlet systems*	1st (2016)	Deadline to submit proposed changes for next edition is 3/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=21-016
CGA H-13, *Hydrogen pressure swing adsorber (PSA) mechanical integrity requirements*	1st (2017)	Deadline to submit proposed changes for next edition is 8/1/2022. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=22-027
CGA H-14, *HYCO plant gas leak detection and response practices*	1st (2018)	Deadline to submit proposed changes for next edition is 12/8/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-045
CGA H-15, *Safe catalyst handling in HYCO plants*	1st (2020)	Deadline to submit proposed changes for next edition is 9/1/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-59
CGA H-XXX (TBD), *Small scale hydrogen production and delivery*	New publication not released yet	Task force is creating first draft that will then go to the CGA membership for review.
CGA P-28, *OSHA process safety management and EPA risk management plan guidance document for bulk liquid hydrogen supply systems*	4th (2014)	Next step for 5th edition is review by CGA Standards Council.

Standard	Current edition	Status
CGA PS-31, *Position statement on cleanliness for proton exchange membranes hydrogen piping / components*	1st (2007 – reaffirmed 2019)	Deadline to submit proposed changes for next edition is 6/12/2025. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-16
CGA PS-33, *Position statement on the use of LPG or propane tanks as compressed hydrogen storage buffers*	1st (2008 – reaffirmed 2020)	Deadline to submit proposed changes for next edition is 12/10/2026. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=25-41
CGA PS-46, *Position statement on roofs over hydrogen storage systems*	1st (2017)	Deadline to submit proposed changes for next edition is 3/6/2023. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=23-012
CGA P-48, *Position statement on clarification of existing hydrogen setback distances and development of new hydrogen setback distances in NFPA 55*	1st (2016)	Deadline to submit proposed changes for next edition is 2/12/2021. https://portal.cganet.com/Publication/Workspace/Outline.aspx?work_id=21-062

American Society for Testing & Materials (ASTM) **Jennifer Hamilton**

The June ASTM committee meetings were held online, and we also had a workshop on hydrogen fuel sampling and analysis. The presentations from the Hydrogen Fuel Sampling and Analysis Workshop can be found under "Additional Information" on this page: https://www.astm.org/COMMITTEE/D03.htm#_ga=2.186655336.1184875783.1596650573-1792656240.1587507828. Had presentations from Japan and the US. There may be a new ASTM method developed based on the presentations are work done there.

We got a new technical contact for D7652: *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*. The new technical contact is Mark Taylor at Airborne Labs

American Society of Mechanical Engineers (ASME) **Ray Rahaman**

Tabled until next meeting.

VI. Discussion Topics

Facilitating Deployment **All**

Center for Hydrogen Safety **Nick Barilo**

The two conferences coming up in September and October. The agenda is being put together and close to being finalized for September. The European conference in October is still in development. More details available at www.aiche.org/chs.

Regulatory Matrix Review and Comment **Karen Quackenbush**

The June 30, 2020 matrix is available (included in meeting notice).

Please direct any updates, questions, or comments to Karen Quackenbush by email at kquackenbush@fchea.org.

Permitting and Installation of Hydrogen Fueling Stations

California Station Implementation **Jennifer Hamilton**

CAFCP will be holding next quarterly h2 station update at the end of August.

Hope to have the latest NOPA released from California in the near-future to announce the next tranche of station awards.

An update is being rolled out with SOSS called refresh. This is a tool to inform customers and improve the overall fueling experience. Here's the blog post for the Station Refresh: https://cafcp.org/blog/soss-station-refresh

Here is CAFCP's by the numbers page for the latest on FCV and h2 station deployments - https://cafcp.org/by_the_numbers

California Div. of Measurement Standards/Fuel Quality / Metrology **Christina Daniels**

No updates at this time.

Legal Metrology Standards Hydrogen Fuel Quality and Measurement **Juana Williams/Ralph Richter**

No updates at this time.

VII. Open Discussion & Other Issues

No additional business at this time.

VIII. Next Meeting – Wednesday, September 2nd at 2:00 PM US Eastern