

Notes from September 13, 2012, DOE Fugitive Emissions Working Group Meeting

Updates (Josh Silverman, FEWG Chair)

The Chair welcomed everybody to the call. The reporting season is approaching; materials are already being distributed to the Program leaders at headquarters. Throughout the complex, many of the quick and easy actions to control fugitive emissions have been implemented and many sites are now moving on to identify additional steps to further control and reduce fugitive emissions. Fugitive emissions have been cut at lower cost and with less mission disruption than cuts to any other type of GHG emissions. The Chair encouraged FEWG members to work with their respective Site Sustainability Plan (SSP) authors to ensure that the fugitive emissions cuts and plans continue to be detailed in the narrative portion of the SSP. The narratives are extremely valuable planning tools, and are read very closely by many different offices at headquarters.

CEDR reporting looks very similar to last year. The Sustainability Performance Office is hosting several training webinars and open calls to help guide the DOE community through the reporting process. Additional information about these webinars and calls is attached and at the end of these notes.

Transition of Fugitive Emissions Working Group to Clean Air Working Group: Proposal and Discussion (Josh Silverman, FEWG Chair)

The Chair introduced the idea of combining the FEWG and the CAWG. The FEWG was created out of an urgent need to understand and control large quantities of fluorinated fugitive emissions, and significant improvements have been made in this area over the past two years. Many of the sites participating in the FEWG have completed their major reduction efforts and are now moving into more of a maintenance mode. HS-21 is considering combining the FEWG and CAWG because there is a lot of overlap in the membership lists of these groups, and because the content matter overlaps, especially with EPA using the Clean Air Act to regulate GHGs. The Chair requested feedback on this proposal, either during the call or later through private phone calls or email. During the FEWG meeting, three comments were received: the first responder supported the idea because his site is starting to be in SF₆ maintenance mode and he is being pulled toward CAWG topics; the second responder suggested merging FEWG with the Sustainability Assistance Network because she likes the site-activity focus of the SAN more than the regulatory compliance focus of the CAWG; and the third responder thinks that the FEWG should stay independent because there is still a need for a group to address issues such as controlling non-SF₆ fugitive emissions from industrial processes, including ODSs and other non-SF₆ fluorinated gases.

The Chair thanked the members for their immediate feedback and urged the other FEWG members to contact him later with their thoughts. HS-21 will distribute a written proposal for

merging the two groups to the FEWG and request feedback from the FEWG members. HS-21 will compile the feedback, and bring it back to the FEWG at the next meeting, hopefully in November.

Draft Paper - SF₆ Byproduct Safety (Jane Powers, Office of Sustainability Support)

Ms. Powers presented a summary of a draft white paper summarizing the available information on SF₆ byproducts and related safety considerations. SF₆ is inert, but byproducts develop when used in high voltage systems. Safe SF₆ reuse is a DOE goal, so understanding the current body of knowledge regarding these byproducts is an important part of maintaining a safe work place and a healthy work force.

After reviewing the available literature, the draft paper's authors summarized their results into four conclusions:

1. Based on review of the available information on SF₆ byproducts, there is insufficient data to conclude whether byproducts exist in sufficient concentration to pose a safety risk when capturing or reclaiming SF₆ from any equipment.
2. When conducting maintenance on SF₆ switchgears in confined areas, it appears that common practice includes the use of HEPA-certified respirators with acid vapor cartridges.
3. For large-scale accelerator systems, the handling systems can include alumina purifiers and other treatment methods to remove byproducts from the gas prior to collection.
4. For outdoor areas or spaces with sufficient ventilation, such practices may not be necessary.

Question: Mr. Chad Bourgoïn thanked HSS for taking on this research topic and stated that he disagrees with the paper's conclusion that there is insufficient data to conclude that SF₆ byproducts pose a safety risk. Mr. Bourgoïn described several documented incidents involving SF₆ byproducts and iterated safety considerations that should be in place wherever SF₆ byproducts might exist.

Answer: The Chair explained that this white paper, which included review of the literature documenting the safety incidents, was to evaluate current knowledge of the issue; it is not intended as a guide on SF₆ handling. The Chair also said that he and Ms. Powers would continue the discussion with Mr. Bourgoïn to determine if additional changes were warranted.

Sandia National Laboratory SF₆ Emission Release (Greg Peña, Sandia National Laboratories)

Mr. Peña described a recent incident at SNL that resulted in release of 690 to 1380 lbs of SF₆. A commercially purchased reclaimer (from Cryoquip) was storing 6-12 bottles of SF₆ during reconfiguration of the HAWK pulsed power system. The reclaimer is approximately 10 years old. During an inspection, personnel noted that the gauges indicated that the reclaimer was empty. After consultation with the system manufacturer, SNL personnel utilized nitrogen to pressurize the system and identified the source of the leak as the primary storage tank pressure gauge, which was repaired.

Through additional research and conversations with the manufacturer, SNL hypothesizes that the pressure gauge failed because the system requires evacuation of the storage before filling with SF₆, and the joint of the pressure gauge design was not meant to flex in both directions. The system is stored outside, so the pressure gauge joint experiences repeated movement due to ambient thermal cycling that engages the system chillers. This would exacerbate a weakened joint compromised during evacuation of the storage tank. The current system design does not address minimizing or eliminating leak paths from the storage tank due to component failure or leaks from tank penetrations. Pressure vessel safety requirements mean that the pressure relief valve cannot be removed, so SNL has worked with the manufacturer to incorporate design features that will improve the gas isolation capability for future systems and identify elements of existing systems that can be isolated.

In the meantime, SNL is writing up their experience and findings to share with the DOE community. Mr. Peña urged all sites to investigate their systems for problematic areas that have not been previously identified in the operations documentation provided by the manufacturer, but may add vulnerability with current SF₆ discharge objectives. SNL has also provided several recommendations to the manufacturer about improving documentation of recommended system maintenance, improving the pressure gauges, and isolation of the stored gas.

EPA SF₆ Reporting Rule for Electric Distribution Systems (Larry Stirling, Clean Air Working Group, HS-21)

Mr. Stirling reported that an information brief about Subpart DD to EPA's Mandatory GHG Reporting Rule should be available for release to the DOE community very soon. The Subpart DD reports to EPA covering 2011 are due September 28. For DOE facilities with electrical transmission and/or distribution equipment located on site and managed by the facility, there is a two-step process to determine if that site is required to report emissions under Subpart DD:

- PMAs (and facilities already subject to Subpart D) must report for Subpart DD if the total name plate capacity in all equipment that is owned or operated by the PMA is greater than or equal to 17,280 lbs (7,838 kg) of SF₆ and certain PFCs.
- Additionally, any DOE site must report for Subpart DD if total GHG emissions from processes listed in Tables A-3 and A-4 of the rule total more 25,000 mtCO₂e and if the total equipment nameplate capacity is 17,280 lbs or more of SF₆ or select PFCs.

Electrical equipment dedicated entirely to research and development and hermetically sealed electrical equipment are not to be included in the total nameplate capacity used to determine Subpart DD applicability.

Mr. Stirling advised that, if your facility is not already required to report GHGs to EPA, you should take a quick look at the quantity of SF₆ and PFCs that you have in electrical equipment, but you probably do not have to report under Subpart DD. In other words, if you are not already reporting for stationary combustion or any of the other included industrial processes,

you will likely not have to report under Subpart DD, regardless of your total nameplate capacity.

Closing Remarks (Josh Silverman, FEWG Chair)

The Chair thanked all the participants and presenters. The next FEWG meeting is tentatively scheduled for Thursday, November 8th from 11am to noon EDT. Please provide any suggestions for topics and/or presentations to Josh Silverman or Jeff Eagan.

Contact information:

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Schedule of DOE Sustainability Performance Office CEDR Support Calls

The following telephone numbers are for the open Q&A calls every Wednesday from 1:00 to 2:00 pm EDT:

October 3, 2012 – (301) 903 - 0684

October 10, 2012 – (301) 903 - 0684

October 17, 2012 – (301) 903 - 0684

October 24, 2012 – (301) 903 - 0684

October 31, 2012 – (301) 903 - 0684

November 7, 2012 – TBD

November 14, 2012 – TBD

November 21, 2012 – TBD