



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 20, 2021

U.S. Nuclear Regulatory Commission Public Meeting Summary

Title: Meeting with the Industry Steam Generator Task Force

Meeting Identifier: 20211199

Date of Meeting: October 7, 2021

Location: Webinar

Type of Meeting: Partially Closed Meeting

Purpose of the Meeting: The purpose of this meeting was for the U.S. Nuclear Regulatory Commission (NRC) staff to discuss steam generator (SG) issues with the industry Steam Generator Task Force (SGTF).

General Details: The industry SGTF met with NRC staff on October 7, 2021, by webinar. The purpose of the meeting was to discuss a variety of SG issues. The meeting consisted of open and closed portions during which public and proprietary information was discussed, respectively. The public NRC and industry slides are available in the Agencywide Documents Access and Management System (ADAMS) under Package Accession No. ML21293A117. This meeting was noticed as a partially closed meeting and the agenda is available in ADAMS under Accession No. ML21259A064.

**LISTING OF ATTENDEES
U.S. NRC MEETING WITH THE INDUSTRY STEAM GENERATOR TASK FORCE**

October 7, 2021

| Participant | Affiliation | Participant | Affiliation |
|--------------------|------------------------------------|--------------------|--------------------|
| Alan Brown | Intertek | Rich Guill | EPRI |
| Ashley Birdett | Luminant - CPNPP | Russell Cipolla | Intertek |
| Bill Cullen | EPRI | Sasan Bakhtiari | ANL |
| Brent Capell | EPRI | Scott Redner | Xcel Energy, Inc. |
| Craig Kelley | Framatome | Sean Kil | EPRI |
| Cotasha Blackburn | Southern Company | Steve Fluit | BWXT |
| Daniel Folsom | TVA | Tim Thulien | Duke Energy |
| Dan Mayes | Duke Energy | Warren Leaverton | APS |
| Dean Masters | Wolf Creek Nuclear Operating Corp. | Thomas Bipes | Zetec |
| Douglas Hansen | APS | Allen Hiser | NRC |
| Helen Cothron | EPRI | Andrew Johnson | NRC |
| James Benson | EPRI | Brian Smith | NRC |
| Jana Bergman | Curtiss-Wright | Emmanuel Sayoc | NRC |
| Jasmyn Bone | Entergy | Greg Makar | NRC |
| Jeff Raschiatore | Westinghouse | Jason Daniel | NRC |
| Jesse Baron | TVA | Joel Jenkins | NRC |
| John Arhar | PG&E | Leslie Terry | NRC |
| Kester Thompson | FPL | Patrick Purtscher | NRC |
| Lee Friant | Exelon Nuclear | Paul Klein | NRC |
| Michael Stark | Dominion Energy | Steven Bloom | NRC |
| Pat Wagner | Wolf Creek Nuclear Operating Corp. | | |
| Patrick Fabian | PSEG Nuclear | | |
| Phil Rush | MPR | | |

Summary of Presentations: Industry representatives made presentations on processes for sharing information with the NRC, recently published Electric Power Research Institute (EPRI) reports, status of industry guidelines, recent operating experience, industry adoption of Technical Specification Task Force (TSTF), TSTF-577, Revision 1, “Revised Frequencies for Steam Generator Tube Inspections” (ADAMS Accession No. ML21060B434), and the definitions of dents and dings. In addition, the industry and NRC staff discussed proposed changes to Aging Management Program (AMP) XI.M19, “Steam Generators,” in Volume 2 of NUREG-2191, “Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report” (ADAMS Accession No. ML17187A204). Additional details of the information exchanged during the meeting is provided below.

- EPRI shared their newly developed process for sharing information with the NRC. The NRC will continue to receive the EPRI SG guideline documents that make up the industry SG Program, and interim guidance documents, with a proprietary determination affidavit. For other SG related documents, EPRI may initially share them with the NRC as “Read Only” through an electronic reading room, which allows the staff the opportunity to review the documents and determine if formal submission is necessary.
- Recently published EPRI reports were discussed related to primary water reactor secondary side hydrazine alternatives, primary-to-secondary leakage, SG eddy current inspection data signal simulation, and technical bases for longer inspection intervals for thermally treated Alloy 600 SG tubing. In addition, industry informed the staff of recently issued interim guidance related to an alternative method to measure dispersant concentration in secondary water chemistry and analyzing SG eddy current inspection data.
- International operating experience related to dense scale spalling off SG tubes and resulting in tube wear was presented. EPRI will continue discussions with the international utility to learn more about the mechanism resulting in tube wear and whether it is a potential mechanism at domestic plants. In addition, the industry is considering research by creating deposits on tubes and investigating what eddy current examinations can determine about the nature of the deposits, to better understand the spalled deposits that caused tube wear.
- International operating experience related to flow accelerated corrosion of the primary moisture separators at a pressurized heavy water reactor (PHWR) was also presented. Industry clarified that the inspection frequency of the upper internals, such as the primary moisture separators, is typically provided by the original equipment manufacturer. Whether an analysis had been performed, to determine if the degradation of the moisture separators was flow accelerated corrosion or liquid drop impingement, was not known.
- The SGTF reported that 29 units have already submitted license amendment requests (LARs) to adopt TSTF-577, 4 units plan to submit LARs in calendar year 2021, 18 units plan to submit LARs in calendar year 2022, and the remaining units may submit later or not at all. In addition, the SGTF representative reported that some of the thermally treated Alloy 600 fleet are planning or considering inspecting full length with advanced probes.
- The NRC and the SGTF discussed the definitions of “dents” and “dings” in the SG guidelines. A dent is defined as a local reduction in the SG tube diameter due to corrosion products from carbon steel, while a ding is defined as a local reduction in the SG tube diameter caused by manufacturing, support plate shifting, vibration, or other mechanical means. The NRC staff communicated that there appears to be inconsistencies in the use of

the terms dents and dings. The NRC staff requested that licensees identify their plant-specific definition of dents and dings in the SG tube inspection report.

- Following approval of TSTF-577, the industry identified a potential conflict between AMP XI.M19 in Volume 2 of NUREG-2191 related to the requirement to inspect the SG divider plate assemblies, tube-to-tubesheet welds, heads, and tubesheets at least every 72 effective full power months or every third refueling outage, whichever results in more frequent inspections. The industry also noted that the requirement does not exclude materials that are not susceptible to stress corrosion cracking. The NRC staff clarified that the requirement is applicable to all SGs regardless of material. This is based on U.S. operational experience with detection of cladding flaws and damage, which can occur in any of the materials used. The NRC staff agreed that clarification could be made through interim staff guidance (ISG) and stated that prior to issuance of an ISG license renewal applicant may take an exception to the requirement. The NRC staff shared proposed ISG wording for discussion purposes only during the meeting (ADAMS Accession No. ML21293A118).

Closed Discussion

- The final portion of the meeting was closed due to proprietary information related to EPRI SG guideline revisions.

If you have any questions regarding this meeting summary, please feel free to contact Leslie Terry by phone at 301-415-1167, or by e-mail at Leslie.Terry@nrc.gov.

Attachments:

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|---------------------|-------------|
| 1. Meeting Notice: | ML21259A064 |
| 2. NRC Slides: | ML21293A118 |
| 3. Industry Slides: | ML21277A031 |
| 4. Package: | ML21293A117 |

SUBJECT: SUMMARY OF THE OCTOBER 7, 2021, PARTIALLY CLOSED MEETING WITH
THE INDUSTRY STEAM GENERATOR TASK FORCE TO DISCUSS STEAM
GENERATOR ISSUES
DATED OCTOBER 20, 2021

DISTRIBUTION:

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Package: ML21293A117

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