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

February 21, 2018

MEMORANDUM TO: Steven D. Bloom, Chief
Chemical, Corrosion, and Steam Generator Branch
Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

FROM: Andrew B. Johnson, Materials Engineer ***/RA/***
Chemical, Corrosion, and Steam Generator Branch
Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF THE JANUARY 23, 2018 CATEGORY 2 PUBLIC MEETING WITH THE STEAM GENERATOR TASK FORCE TO DISCUSS STEAM GENERATOR ISSUES

The industry's Steam Generator Task Force met with U.S. Nuclear Regulatory Commission (NRC) staff on January 23, 2018, at the NRC Headquarters in Rockville, MD. The purpose of the meeting was to discuss a variety of steam generator (SG) issues. The topics are shown in the industry and NRC staff slides, which are available in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML18022B105 and ML18023A085, respectively. The enclosure to this letter provides a list of people who attended the meeting in person and by phone. This meeting was noticed as a public meeting and the agenda is available in ADAMS under Accession No. ML18023A087.

During the meeting, industry representatives made presentations which addressed topics described in the meeting notice. At various points in the meeting, there were additional discussions about agenda topics. Information exchanged during the meeting and not included in the presentation materials is summarized below. Unless noted otherwise, the information below was stated by industry representatives.

Acronyms used and not defined in the presentations are listed below:

- TVA – Tennessee Valley Authority
- QA – Quality Assurance

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- The nuclear industry is continuing its effort to understand and characterize fluid elastic instability through testing at the Canadian Nuclear Laboratories (CNL). Two-phase Freon testing is planned to begin in February of 2018. The NRC staff plan to observe testing at CNL in March of 2018.

- An industry representative provided an overview of the guidelines related to SG automated analysis (AA). The NRC staff questioned how errors identified at a site/utility during performance monitoring are communicated to the rest of the industry. The industry stated that these types of errors are typically discussed at technical advisory group meetings and are resolved via generic operating experience resolution processes. Furthermore, the industry stated that if an indication is missed because of an error identified during performance monitoring, Appendix L of the Electric Power Research Institute (EPRI) "Steam Generator Examination Guidelines" provide direction to requalify.

- The NRC staff asked how AA programs vary between plants with different tube materials/configurations. The industry responded that there is not much variability between plants with the same tube materials and thicknesses, but plant-specific data and noise levels may create some variability. The industry also stated that certain parameters utilized in AA configurations, such as phase angle window settings, are plant-specific.

- The industry described the programs in place to address foreign objects and foreign object wear in SGs. In general, the programs in place are focused on foreign material exclusion (FME) and preventing the introduction of foreign objects to secondary side systems. These programs rely on Institute of Nuclear Power Operations (INPO) 07-008, "Guidelines for Achieving Excellence in Foreign Material Exclusion." Best practices taken from plants are listed in the INPO guidelines.

- Regarding SG design improvements to address foreign objects, the industry stated that 28 units have SGs that were fabricated with internal FME systems, 6 of which have reported foreign object wear. There have not been any plants that have retrofitted their SGs with FME systems.

- It is often not practical to retrieve foreign objects deep in the tube bundle since the risk of tube damage retrieving an object outweighs the benefit. A software tool is being developed to investigate the potential to estimate wear from a foreign object left inservice. Industry stated that the model would utilize parameters such as size, material, and location of foreign objects to estimate the wear that would result from an object left inservice.

- The NRC staff inquired whether any effort has been launched to trend the types of on-site maintenance evolutions that lead to the introduction of foreign objects to secondary side systems. The industry responded that a task force in 2004 discovered that many parts could not be accurately trended since there were many instances in which foreign object wear was identified with no object present. Industry stated that a report was published in 2011, which did not identify worker practice to be the leading contributor to the introduction of foreign objects to secondary side systems.

- The NRC staff asked if the committee that is revising the EPRI "Primary-to-Secondary Leakage Guidelines" is considering providing additional guidance on interpreting different leakage rates from different monitors. Industry representatives responded that this is one of the items being discussed by the revision committee.

- Regarding the SG eddy current simulation model, the NRC staff asked whether benchmarking has been performed to validate the models. Industry responded that the models are being validated by comparing the generated signals with those from calibration standards or those that have been sized with accurate techniques (i.e., destructive testing).

- The industry stated that currently there are no plants with deviations from Nuclear Energy Institute (NEI) 03-08, "Guideline for the Management of Materials Issues." Previously, one licensee deviated from a "needed" requirement in Revision 3 of the EPRI "Steam Generator Integrity Assessment Guidelines," to use an approved Examination Technique Specification Sheet (ETSS) contained in Revision 7 of the EPRI "Pressurized Water Reactor Steam Generator Examination Guidelines," Section 6.2 for outside diameter stress corrosion cracking (ODSCC) sizing. The Appendix I ETSS oversized the maximum depth values for axial ODSCC at the Combustion Engineering (CE) design plant. This plant deviated from the requirement by using a modified ETSS that was identical to the ETSS approved per Appendix I, with the exception that only the subset of data from CE plants was used, instead of the combined fleet data. This deviation began in 2012 and was resolved when Revision 4 of the EPRI "Steam Generator Integrity Assessment Guidelines" was implemented on August 31, 2017.

- The NRC staff asked if the withdrawal of two utilities from NEI has any implications on commitments relevant to SG programs. The industry responded that commitments are not expected to be impacted.

Project No.: 689

Enclosure:
Attendance List

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DISTRIBUTION:
PUBLIC
GWilson
JDonoghue
AHiser
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PKlein
PPurtscher
LTerry

ADAMS Accession Nos.: Package: ML18047A717;
Meeting Summary: ML18045A036; Meeting Notice: ML18023A087
Industry Slides: ML18022B105 NRC Slides: ML18023A085

OFFICE	PM:DMLR:MCCB	LA:DMLR:MRPB	BC:DMLR:MCCB
NAME	AJohnson	YEdmonds	SBloom (Paul Klein for)
DATE	02/16/2018	02/20/2018	02/21/2018

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Attendance List
January 23, 2018, NRC Public Meeting with the
Steam Generator Task Force to Discuss Steam Generator Issues

Note: The list of phone participants may not be all-inclusive

SGTF/Industry Participants
Jana Bergman, Curtiss-Wright
Jim Benson, EPRI
Thomas Bipes, Zetec
Kent Colgan, Framatome
Helen Cothron, EPRI
Steve Fluit, BWXT
Carl Friant, Exelon
Dan Folsom, TVA
Greg Kammerdeiner, First Energy
Robert MacEacheron, BWXT
Dan Mayes, Duke Energy
Jeremy Mayo, TVA
Jeff Raschiatore, Westinghouse
Scott Redner, Prairie Island
Phil Rush, MPR
Damian Testa, Westinghouse

NRC
Steven Bloom
Alan Huynh
Andrew Johnson
Paul Klein
Seung Min
Pat Purtscher
Dave Rudland
Leslie Terry
Yuken Wong

Phone Participants
Jesse Baron, Westinghouse
James Baumann, BWXT
Brent Capell, EPRI
Russell Cipola, Intertek
John Conly, Certrec
Matthew Domke, NRC
Patrick Fabian, PSEG
Jeff Fleck, Areva
Sean Kil, EPRI
Edward Korkowski, FPL
Mike Liu, Intertek
Greg Makar, NRC
Tim Thulien, Duke Energy

Enclosure