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

July 12, 2018

Brian Burgos
MRP Program Manager
Electric Power Research Institute
3420 Hillview Avenue
Palo Alto, CA 94304

SUBJECT: OPERATING EXPERIENCE REQUEST FOR ADDITIONAL INFORMATION FOR ELECTRIC POWER RESEARCH INSTITUTE TOPICAL REPORT MRP-227, REVISION 1, "MATERIALS RELIABILITY PROGRAM: PRESSURIZED WATER REACTOR INTERNALS INSPECTION AND EVALUATIONS GUIDELINE" (CAC NO.MF7223; EPID L-2016-TOP-0001)

Dear Mr. Burgos:

By letter dated December 21, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15358A046), the Electric Power Research Institute (EPRI) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review Topical Report MRP-227, Revision 1, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection And Evaluations Guideline." By letters dated October 24, 2017 (ADAMS Accession Package No. ML17289A507), and January 31, 2018 (ADAMS Accession Package No. ML18038A875), EPRI submitted responses to the NRC staff request for additional information (RAI) questions (ADAMS Accession Package No. ML17079A027). Also, EPRI provided information in response to supplemental questions (ADAMS Accession Package No. ML18142A229) discussed during public meetings on February 15 and April 23, 2018 (ADAMS Accession Nos. ML18053A058 and ML18096A448).

Recently, the NRC staff has become aware of operating experience related to pressurize water reactor internals reported during the Materials Information Exchange meeting held on May 21-23, 2018. Upon review of the operating experience information provided at the May technical exchange, the NRC staff has prepared the enclosed RAI questions to complete its review.

In an email exchange between Mr. Kyle Amberge representing EPRI and me, we agreed that the NRC staff will receive your response to the enclosed RAIs by November 30, 2018.

If you have any questions regarding the enclosed RAI questions, please contact me at 301-415-7297 or Joseph.Holonich@nrc.gov.

Sincerely,

/RA/

Joseph J. Holonich, Senior Project Manager
Licensing Processes Branch
Division of Licensing Projects
Office of Nuclear Reactor Regulation

Docket No. 99902021

Enclosure:
RAI questions

SUBJECT: OPERATING EXPERIENCE REQUEST FOR ADDITIONAL INFORMATION FOR ELECTRIC POWER RESEARCH INSTITUTE TOPICAL REPORT MRP-227, REVISION 1, "MATERIALS RELIABILITY PROGRAM: PRESSURIZED WATER REACTOR INTERNALS INSPECTION AND EVALUATIONS GUIDELINE" (CAC NO. MF7223; EPID L-2016-TOP-0001) DATED JULY 12, 2018

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REQUEST FOR ADDITIONAL INFORMATION

"MATERIALS RELIABILITY PROGRAM: PRESSURIZED WATER REACTOR INTERNALS

INSPECTION AND EVALUATION GUIDELINE," (MRP-227 REVISION 1)

ELECTRIC POWER RESEARCH INSTITUTE

RAI 28

During the 2018 Materials Information Exchange Meeting, the Electric Power Research Institute, Materials Reliability Program (EPRI-MRP) and the Pressurized Water Reactor Owner's Group (PWROG) Materials Subcommittee made presentations describing recent operating experience with accelerated wear of control rod drive mechanism (CRDM) thermal sleeves (Ref. 1, 2). This wear has the potential to generate loose parts which could jeopardize control rod insertion.

Describe how this operating experience will be addressed in MRP-227, Rev. 1.

RAI 29

During the 2018 Materials Information Exchange Meeting, the EPRI MRP reported that, during the spring 2018 outage, a domestic Combustion Engineering (CE) plant identified cracks on the outer diameter (OD) surface of the core barrel in the belt-line elevation using enhanced visual (EVT-1) examination (Ref. 3). EPRI indicated that one crack-like indication was found in base-metal adjacent to the middle-girth weld, which is a primary component in MRP-227-A (Ref. 4), and that several crack-like indications were found in base-metal adjacent to the middle-axial weld, which is an expansion component in MRP-227-A. EPRI stated that industry established joint EPRI/PWROG Focus Group similar to Baffle-Former-Bolt Focus Group that was established in 2016, with the intent to provide generic assessment of impact of OE to industry.

Describe how this operating experience will be addressed in MRP-227, Rev.1.

RAI 30

EPRI's response to the Request for Additional Information (RAI) 8 indicated the interim guidance for baffle-former bolt (BFB) examinations will be incorporated in the final version of MRP-227, Rev. 1. The NRC staff assessment of the BFB interim guidance (Ref. 5) contained the following recommendation regarding the submittal of plant-specific evaluations of BFB subsequent examination interval:

> If the table in MRP 2017-009 indicates that the subsequent inspection interval is not to exceed 6 years (e.g., downflow plants with ≥ 3% BFBs with indications or clustering, or upflow plants with ≥ 5% of BFBs with indications or clustering), the plant-specific evaluation to determine a subsequent inspection interval should be submitted to the NRC for information within one year following the outage in which the degradation was found. Any evaluation to lengthen the determined inspection interval or to exceed the maximum inspection interval recommended in MRP-2017-009 should be submitted to

the NRC for information at least one year prior to the end of the current applicable interval for BFB subsequent examination. This recommendation should be incorporated into the final NRC-approved version of MRP-227, Rev. 1.

Please confirm that this NRC staff recommendation will be included in MRP-227, Rev. 1, or another NRC-approved industry guidance document, such as WCAP-17096-NP-A (Ref. 6) or provide a basis for not doing so.

References

1. 08b - MRP Update - OE Wear at Thermal Sleeve Flanges. May 22, 2018 (ADAMS Accession No. ML18142A395)

2. 11c - PWROG MSC Update - Thermal Sleeve OE. May 22, 2018 (ADAMS Accession No. ML18142A457)

3. 08a - MRP Update - OE Core Barrel Cracking. May 22, 2018 (ADAMS Accession No. ML18142A394)

4. Transmittal: PWR Reactor Internals Inspection and Evaluation Guidelines (MRP-227-A). (ADAMS Package Accession No. ML120170453)

5. Staff Assessment of EPRI MRP Interim Guidance on Baffle Former Bolts. November 20, 2017 (ADAMS Accession No. ML17310A861)

6. WCAP-17096-NP-A, Rev 2, “Reactor Internals Acceptance Criteria Methodology and Data Requirements,” August 31, 2016 (ADAMS Accession No. ML16279A320)