

May 20, 2015

MEMORANDUM TO: Anthony J. Mendiola, Chief  
Licensing Processes Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

FROM: Joseph J. Holonich, Senior Project Manager /RA/  
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SUBJECT: SUMMARY OF THE MARCH 31, 2015, MEETING WITH THE  
ELECTRIC POWER RESEARCH INSTITUTE ON PLANNED  
REVISIONS TO MATERIALS RELIABILITY PROGRAM  
(MRP)-227-A, "PRESSURIZED WATER REACTOR INTERNALS  
INSPECTION AND EVALUATION GUIDELINES"

On March 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) staff met with representatives from the Electric Power Research Institute (EPRI) and industry. This was the second meeting to discuss the changes and adjustments being considered in Revision 1 to MRP-227-A, "Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." Information pertaining to this meeting, including presentations by EPRI and NRC staff as well as attendees, can be found in the meeting package in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML14339A544.

In its opening remarks, the NRC staff stated that it saw this meeting as a continuation of the first meeting held in October 2014. The NRC staff also stated that the meeting was an opportunity to exchange information and better understand how the action items (AIs) from the review of MRP-227 would be addressed in the revision.

Industry, in its opening remarks, indicated that the process for revising MRP-227 was well along. Further, the industry stated its expectations for the meeting were to present the strategy and plans for the updates and to get NRC staff feedback.

During the opening remarks, a question arose about how the AIs from the NRC staff review of MRP-227 were separate from MRP-227-A and the NEI 03-08, "Materials Initiative" (ADAMS

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Accession No. ML110950618). The NRC staff explained that the AIs were documented in its safety evaluation (SE) for MRP-227 and that they were requirements for licensees who used the topical report. The discussion concluded with the industry noting that it intends to address the AIs generically in MRP-227, Revision 1.

EPRI and the NRC staff each made presentations at the meeting. Copies of the slides used can be found in the ADAMS package identified in the first paragraph.

One aspect being considered for change in MRP-227, Revision 1 was to inspect a 25 percent enhanced visual examination (EVT)-1 sample of the circumferential surface weld length of the upper core barrel upper flange weld for stress corrosion cracking (SCC) in Westinghouse Electric Company (Westinghouse) and Combustion Engineering (CE) plants as a primary inspection. A second 25 percent primary inspection EVT-1 sample of the circumferential surface weld length would be required for irradiation-assisted SCC (IASCC) in the Westinghouse lower girth core barrel weld and the middle girth weld of the CE design. Currently 100 percent of all of the core barrel welds are inspected. In the presentation the industry indicated that the proposed change was based on the fact that no degradation of core barrel welds has been observed and if degradation is found, it would be fed into the MRP-227 process to determine if changes were needed. In addition, the industry noted that within the 25 percent sample, a large amount of weld length, approximately 9000 inches would be inspected.

In discussions on this proposal, the NRC staff indicated that a rigorous technical basis and/or a statistical assessment of EVT-1 was needed to support a 25 percent sample for the SCC/IASCC inspections. The NRC staff also noted that this technical justification needs to be crisp and included within the MRP-227, Revision 1, at least at a summary level. It was agreed that a separate discussion on this topic would be beneficial. An action item was identified to schedule the discussion.

During the presentation on cold work, the NRC staff suggested that MRP-227, Revision 1 include information regarding reviews of the cold work of stainless steel reviews, such as in a reference (or as a high-level summary). The industry noted that this may be part of the Pressurized Water Reactor Owners' Group (PWROG) on-going project information. For example, to date, all of the Babcock and Wilcox fleet has been reviewed and found no instances of greater than 20 percent cold-worked components as a result of a detailed review of fabrication records, and to date approximately one-third of the Westinghouse/CE fleet has completed a similar investigation and found no instances of greater than 20 percent cold-work in components. Work on the Westinghouse/CE fleet is on-going but based on a common basis for original fabrication, it is expected the results will be that there is no instance of greater than 20 percent cold-work.

Based on the cold work questions and answers, the NRC staff agreed to provide additional guidance on what is expected in the responses to the RAIs for cold work. This was taken as an action item.

In the industry presentation on AI 5 in the MRP-227 SE, the NRC staff indicated that the industry should include in the MRP-227, Revision 1, a high-level overview of the technical basis behind the "methodology for development" of acceptance criteria for physical measurements of both the Westinghouse hold-down springs and the CE core shroud gaps. This overview would

include a summary of the fundamental purposes (characteristics and function based on core load) of the spring height and measurements.

The industry suggested that WCAP-17096-NP, currently under SE review by the staff, provides the requested overview. It was agreed that to keep MRP-227, Revision 1 nonproprietary, the requested technical basis could be by reference with a high level summary of the WCAP methodology included in MRP-227, Revision 1. An action item was a commitment from EPRI to include the methodology reference in discussions for AI 5.

For AI 7, the NRC staff noted that it has just begun reviewing the Westinghouse proprietary document PWROG-14048-P, "Functionality Analysis: Lower Support Columns," for the cast austenitic stainless steel (CASS) lower-support columns in the Westinghouse design. The staff reported that it intends to provide feedback from its review and would like to discuss with industry any potential next steps.

The staff and industry noted that the approach previously taken to review the proprietary document WCAP-17780-P, "Reactor Internals Aging Management MRP-227-A Applicability for Combustion Engineering and Westinghouse Pressurized Water Reactor Designs," and its companion document MRP-2013-025, "MRP-227-A Applicability Guidelines for Combustion Engineering and Westinghouse Pressurized Water Reactor Designs" (ADAMS Accession No. ML13322A454) may be an effective process to address the review of PWROG-14048-P, along with the MRP-2014-019, "Transmittal of Westinghouse Guidelines for Responding to U.S. NRC Questions Related to MRP-227-A Applicant/Licensee Action Item 7 for Combustion Engineering and Westinghouse Pressurized Water Reactor Lower Support Column Designs," document (ADAMS Accession No. ML14246A011). Because WCAP-17780-P and MRP-2013-025 were not submitted for formal review, the NRC staff documented its assessment in ADAMS Accession No. ML14309A484 but did not issue an SE.

Additionally, the NRC staff stated a concern with the ability to extend the PWROG-14048-P technical approach with the Westinghouse CASS lower-support columns to the CE design. A conference call will be set up in near term for this item. The NRC staff indicated that it would provide feedback on what additional work, if any is needed by PWROG to demonstrate applicability of PWROG-14048-P to the Westinghouse and CE fleet.

Also, the NRC staff commented that it still had an open action from the October 27, 2015, meeting to prepare a clarification to AI 7 to clearly define what was being requested from industry. Industry noted it needs to understand this in order to close it in MRP-227, Revision 1.

The action items from the meeting were:

- 1) A discussion will be scheduled to provide additional information to support the 25 percent sample size of Westinghouse core barrel upper flange welds.
- 2) The NRC staff will provide additional guidance on what is expected in the responses to the RAIs for cold work.

A. Mendiola

- 4 -

- 3) EPRI will provide the high-level text to be included in MRP-227, Revision 1 addressing the methodology for AI 5.
- 4) A call will be scheduled to discuss the staff review of supporting documents for AI 7.

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**ADAMS Accession Nos.: ML15092A086 (Summary); ML15050A434 (Notice); ML14339A544 (Meeting Package)**

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