

August 16, 2016

MEMORANDUM TO: John W. Lubinski, Director  
Division of Engineering  
Office of Nuclear Reactor Regulation

FROM: Robert O. Hardies, Senior Level Advisor */RA/*  
Division of Engineering  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF JULY 27, 2016, INDUSTRY/U.S. NUCLEAR  
REGULATORY COMMISSION ANNUAL MATERIALS  
PROGRAMS INFORMATION EXCHANGE – EXECUTIVE  
SESSION (CATEGORY 2 PUBLIC MEETING)

On July 27, 2016, staff from the U.S. Nuclear Regulatory Commission (NRC) met with representatives of the nuclear industry in the annual executive session for materials program information exchange. The purpose of the annual meeting is for management representatives from the Office of Nuclear Reactor Regulation (NRR), Office of Nuclear Regulatory Research, and Office of New Reactors to discuss with executive representatives of industry materials programs, from a management perspective, issues related to materials degradation in pressurized water reactors (PWRs) and boiling water reactors (BWRs). The attending industry materials programs include the Electric Power Research Institute (EPRI) Materials Reliability Program (MRP), EPRI BWR Vessels and Internals Project (BWRVIP), EPRI Steam Generator Management Program (SGMP), Materials Action Plan Committee (MAPC), the PWR Owners Group (PWROG) Materials Subcommittee, the EPRI Nondestructive Examination (NDE) Action Plan Committee (APC) and the EPRI Long Term Operations (LTO) Committee. A list of meeting attendees is enclosed. The meeting presentation slides can be found in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML16211A058. The meeting notice is available under ADAMS Accession No. ML16208A305.

The NRC staff opened the meeting with some introductory remarks. The committee chair of the EPRI NDE APC reviewed operating experience related to discovery of an indication on a weld that had been mitigated by application of a mechanical stress improvement process (MSIP). The NDE Integration Committee issued industry guidance for plants having welds with MSIP to review previous NDE results and re-inspect if necessary. The NRC indicated its intention to complete confirmatory stress calculations and to complete an evaluation of prior NDE.

The industry executive sponsor of the EPRI LTO commented on draft ageing management programs for subsequent license renewal. He indicated that proposed recommendations for a baseline volumetric inspection of PWR bottom-mounted nozzles using “a qualified volumetric examination method” were unwarranted. He also indicate installation of a new surveillance capsule in cases where sufficient surveillance information had already been generated prior to entering the subsequent period of operation should not be required.

The executive sponsor of the BWRVIP discussed the BWRVIP organization, technical committee responsibilities, and 2016 major tasks. The major tasks include supporting surveillance capsule and integrated surveillance program activities and addressing jet pump flow-induced vibration issues. He summarized operating experience involving an indication in an engineered overlay and described a BWR fleet survey to see if any other similar overlays exist in the industry. The NRC inquired whether some of the survey questions could be misinterpreted.

The executive sponsor of the PWROG Materials Committee describe the organization and recent interactions with NRC staff including assessment of cast austenitic stainless steel, reactor vessel internals cold work, and baffle-former bolts. He described coordination with the EPRI MRP on the subjects of reactor vessel integrity, reactor internals and stainless steel degradation.

The Executive Chair of the PWR Materials Management Program (PMMP) presented the structure and status of the EPRI SGMP. Key activities include: completing generic inputs into plant-specific analyses for susceptibility to fatigue failure, investigating the capabilities and uncertainties associated with a single pass automated data analysis system, publishing Revision 8 of the Examination Guidelines and Revision 4 of the Integrity Assessment Guidelines, and investigating the microstructures of Alloy 600TT operating steam generators to assess stress-corrosion cracking progression. He reviewed recent operating experience with an indication near the top of the tubesheet and indicated the SGMP was updating industry guidance for assessing non-routine findings.

The Executive Chair of the PMMP presented the structure and status of the EPRI MRP. He described research focus areas and 2016 deliverables. He indicated the industry was waiting for NRC to complete its analysis of potential conservatism in NRC Branch Technical Position 5-3. The NRC indicated the technical evaluation was expected to be completed by December, 2016. He discussed the plans and timeline for developing MPP 227, Revision 2, "Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." The MRP is awaiting NRC review of the topical report for peening, MRP-335, Revision 3. Initial implementation of peening was conducted in spring 2016. Finally, the MRP is leading a baffle former bolt focus group that include members from utilities, EPRI, PWROG and vendors. The group developed interim guidance that PMMP issued to industry that described which types of plants need to perform ultrasonic examinations of baffle former bolts at the next refueling outage. The baffle former bolt focus group will continue to monitor operating experience and will issue additional Nuclear Energy Institute (NEI 03-08) interim guidance during fall 2016.

The technical chair of the EPRI MAPC expressed interest in NRC plans for issuing generic screening criteria for cast austenitic stainless steel and NRC plans for developing guidance for performance of probabilistic fracture mechanics analysis. He requested NRC make issuance of the revised FAVOR computer code a priority. He also described the industry's nuclear promise initiative for increasing efficiency. One element pertinent to the materials initiative is an effort to increase efficiency in use of industry resources for topical report review. The industry has created a decision tool and seeks NRC feedback on the tool.

NRC management from the NRR Division of Engineering indicated that communication between industry and NRC materials programs has been useful and should continue. The NRC expressed interest in continuing to receive status updates related to industry's response to baffle former bolt issues. The NRC described its plans for evaluating MSIP stress analysis and NDE, described status of the safety evaluation on topical report MRP-335, Revision 3, described plans to complete technical evaluation of Branch Technical Position 5-3 by December, 2016, and indicated that the impact of Project Aim on materials programs was limited to the cessation of rulemaking activities related to Appendix G.

In response to a request from industry at a previous meeting, a representative from the NRR Division of Policy and Rulemaking described requirements and processes associated with the Office of Management and Budget review of topical report safety evaluations.

NRC management for the NRR Division of License Renewal (DLR) expressed appreciation for industry comments on subsequent license renewal (SLR) guidance documents. With respect to aging management of PWR vessel internals DLR understands that the industry will not complete development of an 80-year version of MRP-227-A for several years, likely until after the first applications for SLR have been submitted. From recent public meetings, DLR believes there is a common understanding with the industry on an interim approach that will enable the early SLR applicants to develop a program that is based on MRP-227-A with a "gap analysis" to address changes for an 80 year operating period. The NRC has developed a generic aging management program that is based on this approach. DLR encourages the industry and the early PWR SLR applicants to have a periodic dialogue with NRC staff to ensure that the industry approach for the "gap analysis" is consistent with regulatory expectations and will result in a program that meets the objectives of the License Renewal Rule.

The following new action items were recorded:

- 1) Industry to check for understanding for utility responses to the engineered overlay survey.
- 2) Industry to provide a target end date/status of the project to demonstrate reactor pressure vessel nozzles never bound the vessel for pressure-temperature limit curves.
- 3) NRC to provide status for delivery of the final safety evaluation on peening.
- 4) At the next technical quarterly call the NRC is to report on its review the industry topical report review evaluation tool and identify a point of contact.
- 5) NRC and industry to report on coordination activities for the gap analysis for MRP 227 for SLR.
- 6) Industry to provide an update on baffle bolt issues at the next phone call.

- 7) NRC Staff to release the FAVOR code update by September 1, 2016, and provide an update at the American Society of Mechanical Engineers Boiler and Pressure Vessel Code meeting in August, 2016.

Project Nos. 669, 689, 691, 694, and 704

Enclosure:  
List of Attendees

- 7) NRC Staff to release the FAVOR code update by September 1, 2016, and provide an update at the American Society of Mechanical Engineers Boiler and Pressure Vessel Code meeting in August, 2016.

Project Nos. 669, 689, 691, 694, and 704

Enclosure:  
List of Attendees

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**ADAMS Accession Nos:**

Package: **ML16229A115**

Summary: **ML16229A187**

Mtg. Notice and Agenda: **ML16208A305**

Presentation: **ML16211A058**

OFFICE	NRR/DE
NAME	RHardies
DATE	08/16/2016

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**NRC Public Meeting  
Annual Materials Programs Information Exchange Meeting  
Executive Session  
July 27, 2016**

David Czufin	TVA
Tim Hanley	Exelon
Scot Greenlee	Exelon
Robin Dyle	EPRI
Allen Hiser	NRC
Steve Swilley	EPRI
Raj Iyengar	NRC
Ken Karwoski	NRC
Bob Hardies	NRC
John Lubinski	NRC
Leo Martin	Duke Energy
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Matt Mitchell	NRC
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