NRR-DMPSPEm Resource

From: Rankin, Jennivine
Sent: Wednesday, February 28, 2018 2:13 PM
To: 'MIKSA, JAMES P (jmiksa@entergy.com)'; 'ERICKSON, JEFFREY S (JERICKS@entergy.com)'
Subject: Palisades Nuclear Plant - Request for additional information regarding proposed alternative for relevant condition (EPID L-2017-LLR-0142)
Attachments: Final PNP RAIs RR 5-6.docx

Good afternoon,

By letter dated December 1, 2017 (Agencywide Documents Access and Management System Accession No. ML17335A013), Entergy Nuclear Operations, Inc. (the licensee), submitted Request No. RR 5-6 for Palisades Nuclear Plant to the U.S. Nuclear Regulatory Commission (NRC) for review and approval, pursuant to the requirements of Title 10 of the *Code of Federal Regulations*, Section 50.55a(z)(2). The licensee's application requested that the NRC authorize its proposed alternative to the successive inspection requirement of Paragraph IWB-2420(b) of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection [ISI] of Nuclear Power Plant Components," for a "relevant condition." The relevant condition refers to a piece of primary coolant pump impeller that is lodged in the interior of the reactor pressure vessel.

Based on its review of the amendment request, the NRC staff has determined that additional information is required to complete the review. A draft request for additional information (RAI) was transmitted on February 21, 2018, and a clarification call was held on February 28, 2018. As agreed upon, please submit your response to the RAI within 30 days of the date of this email. If you wish to alter the date of your response, please contact me at (301) 415-1530.

Please treat this e-mail as formal transmittal of the RAIs.

Thanks,
Jennie

Jennie Rankin, Project Manager
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Recipients:
"'MIKSA, JAMES P (jmiksa@entergy.com)'" <jmiksa@entergy.com>
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"'ERICKSON, JEFFREY S (JERICKS@entergy.com)'" <JERICKS@entergy.com>
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Reply Requested: No
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REQUEST FOR ADDITIONAL INFORMATION

ALTERNATIVE TO THE REEXAMINATION FREQUENCY FOR A RELEVANT CONDITION

FOREIGN MATERIAL LODGED IN THE REACTOR PRESSURE VESSEL

FIFTH 10-YEAR INSERVICE INSPECTION INTERVAL

PALISADES NUCLEAR PLANT

ENTERGY NUCLEAR OPERATIONS, INC.

RENEWED FACILITY OPERATING LICENSE NO. DPR-20

DOCKET NO. 50-255

By letter dated December 1, 2017 (Agencywide Documents Access and Management System Accession No. ML17335A013), Entergy Nuclear Operations, Inc. (the licensee), submitted Request No. RR 5-6 for Palisades Nuclear Plant (PNP) to the U.S. Nuclear Regulatory Commission (NRC) for review and approval, pursuant to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(2). The licensee's application (also referred to as RR 5-6) requested that the NRC authorize its proposed alternative to the successive inspection requirement of Paragraph IWB-2420(b) of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, "Rules for Inservice Inspection [ISI] of Nuclear Power Plant Components," (also referred to as the Code), for a "relevant condition" – a piece of primary coolant pump impeller that is lodged in the interior of the reactor pressure vessel (RPV). The proposed alternative is applicable for the remainder of fifth 10-year ISI interval at PNP, which commenced on December 13, 2015 and ends on December 12, 2025. In accordance with 10 CFR 50.55a(z)(2), the licensee submitted its proposed alternative based on its determination that compliance with the specified Code requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has determined that additional information is required in order to complete its review of this proposed alternative. The staff's request for additional information (RAI) is provided below.

Regulatory and Technical Basis for RAI-1 and RAI-2

The licensee's analytical basis for its proposed alternative relies on the results of its 2014 operability evaluation for meeting the analytical evaluation requirement of Code Paragraph IWB-3142.4. For acceptance of conditions by analytical evaluation, IWB-3142.4 also requires that reexaminations of such conditions be performed during successive inspection periods in accordance with IWB-2420 to determine whether any changes to the conditions have occurred that would require further corrective action. The staff must review certain information from the 2014 analytical evaluation in order to determine whether this condition will remain acceptable for continued service for the duration of this proposed alternative (through December 2025).

RAI-1: Please provide the following information (summary description) for demonstrating that the lodged impeller piece will not affect the functionality of the RPV or the flow skirt during normal plant operations through December 2025:

a. Impeller piece dimensions;

b. Description of the structural evaluation for determining that the impact of the impeller piece wedged between the RPV and the flow skirt would not exceed structural integrity criteria for the RPV wall or the flow skirt support welds;

c. Considering the material types identified in the UFSAR for the RPV cladding (308/309 stainless steel), flow skirt (Inconel), and impeller piece (ASTM A 351, Grade CF8 or Grade CF3), address the potential for corrosion at the interfaces of the lodged piece with the RPV and flow skirt and the effects of corrosion on the structural integrity of the RPV and flow skirt.

RAI-2: Please provide the following information (summary description) for demonstrating that the lodged impeller piece will not generate loose parts that would adversely affect reactor safety during normal plant operations through December 2025:

a. Description of the fracture analysis for determining, based on assumed initiating crack sizes in the piece, that the crack growth rate would reduce and essentially stop once the crack depth approached 75 percent of the thickness of the piece;

b. If the piece could fragment into smaller pieces, please address the impacts of the smaller fragments on the fuel, control rod functionality, and RPV integrity.

Regulatory and Technical Basis for RAI-3

The application appears to rely on other inspections during normal outages (without removal of the core support barrel) that “provide an opportunity to identify a change in the wedged impeller piece's condition” in the unlikely event the condition of the wedged impeller piece would change. As examples, the licensee cited foreign material inspections of the top of the core, inspections of select fuel bundles inside the core, and inspections of select discharged fuel assemblies during each refueling outage. The staff noted that these other inspections are not specified as part of the proposed alternative under Section 5 of the application.

RAI-3

Please provide more detail regarding the specific visual examinations of the RPV interior that are implemented during normal outage activities (without removal of the core barrel), and describe how they could identify whether there is a change in the condition of the lodged impeller piece. If these examinations may provide indications of changing conditions in the wedged impeller piece, please include these other examinations as part of your proposed alternative, or justify why additional examinations do not need to be included as part of the proposed alternative request.