NRR-DMPSPEm Resource

From: Haskell, Russell
Sent: Wednesday, March 20, 2019 11:38 AM
To: Helen L Levendosky; Joe Tanko
Subject: RE: RESUBMITTED: DRAFT Request for Additional Information RE: DC Cook Unit 1 - Leak-Before-Break LAR (EPID L-2018-LLA-0054)

Joe, Helen,

The purpose of this message is to summarize our phone conversation yesterday re: DC Cook, Unit 1 Leak-Before-Break LAR.

As noted in the preceding email, the NRC staff distributed a draft set of RAI's in support of its ongoing safety review of the CNP, Unit 1 LBB LAR. You stated that these RAI's, titled RAI-8 (revised) and RAI-9 (revised), were clearly understood by your staff and no further exchange was necessary between your staff and the NRC. As such, you were informed the NRC staff intends to formalize these RAI's and have added to the docket in support of the LAR review.

For the NRC staff to proceed with its ongoing LAR review, it is requested your RAI responses and supplemental information be submitted to the NRC **NLT Monday May 6, 2019, by COB**. This timeline extends the normal 30 day response time to 45 days in support of current Unit 1 activities, per your request. The NRC staff anticipates your supplemental information will include a revised scope of RCS piping segments included as part of your LBB analysis being proposed for the NRC staff to review. This revision to the LAR was recently discussed during the February 27, 2019, public meeting held between the NRC and your staff.

Lastly, we discussed that, on April 6, 2018, the NRC Project Manager for CNP, Unit 1 communicated to you the NRC's acceptance of the LAR, accompanied by a specific level of effort (review hours) and issuance date. Due to complexities experienced by the NRC staff during its review, these projected milestones have been exceeded. During our discussion, you acknowledged this information.

/Regards.

Russell S. Haskell II
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From: Haskell, Russell
Sent: Tuesday, March 12, 2019 2:20 PM
To: Helen L Levendosky ; Joe Tanko
Subject: RESUBMITTED: DRAFT Request for Additional Information RE: DC Cook Unit 1 - Leak-Before-Break LAR (EPID L-2018-LLA-0054)

Helen, Joe,

On February 27, 2019, a Category 1 public teleconference was held between the U.S. Nuclear Regulatory Commission (NRC) staff and representatives of Indiana Michigan Power Company (I&M, the licensee). The purpose of the teleconference was to discuss the licensee's proposed license amendment request (LAR) to apply leak-before-break (LBB) methods to certain reactor coolant system (RCS) small diameter branch lines at the Donald C. Cook Nuclear Plant (CNP), Unit 1. Specifically, the NRC staff requested for the licensee to clarify its proposed LBB approach under NUREG-0800, Standard Review Plan (SRP), Section 3.6.3, by means of Westinghouse LBB methods. The LAR, dated March 7, 2018, is available in the NRC's Agencywide Documents Access and Management System (ADAMS) (Accession No. ML18072A012).

Based on this recent exchange, the NRC staff understands the licensee intends to propose, in a revised LAR, for the NRC staff to evaluate only portions of the RCS piping extending from each cold leg to associated downstream check valves in each accumulator line (i.e. SI-170-1 through SI-170-4). Should the licensee identify additional RCS piping segments which should be included as part of the LBB analysis for review, this piping will be included in the revised LAR.

Additionally, from the information that was exchanged at the meeting, the below DRAFT RAI-8 & RAI-9 (revised) are being re-transmitted to the licensee to support the staffs ongoing review. Should a clarification call be necessary by your staff, please contact me by next Wednesday March 20, 2019, COB. If no clarification is needed or no contact is made to the NRC by your staff, these RAIs will be marked as "final" and added to the docket for the start of a 30-day requested response time. The NRC staff considers that timely responses to RAIs help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

Please contact me if you have any questions or comments regarding this communication at (301) 415-1129.

Thank you.

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(DRAFT) REQUEST FOR ADDITIONAL INFORMATION
RE: LICENSE AMENDMENT REQUEST FOR APPROVAL OF APPLICATION OF LEAK-BEFORE-BREAK METHODOLOGY FOR
REACTOR COOLANT SYSTEM SMALL DIAMETER PIPING
INDIANA MICHIGAN POWER – DONALD C. COOK NUCLEAR PLANT, UNIT 1
DOCKET NO. 50-315
EPID NO. L-2018-LLA-0054

(DRAFT) RAI-8 (rev. 1)

NRC Information Notice (IN) 2005-024, "Non-conservatism in Leakage Detection Sensitivity," was distributed to inform licensees that the reactor coolant system (RCS) activity assumptions for containment radiation gas channel monitors may be non-conservative. As a result, the containment gas channel may not be able to detect a 1 gallon-per-minute (1 gpm) leak within 1 hour. Due to advancements and improvements in nuclear fuel performance and RCS chemistry control, the actual RCS source term could be orders of magnitude smaller than previous assumptions. Furthermore, in Regulatory Guide (RG) 1.45, Revision 1, "Guidance on Monitoring and Responding to Reactor Coolant System Leakage," it states that a "realistic" primary

radioactivity concentration should be assumed when analyzing the sensitivity of leak detection systems. The RG also states that if LBB analysis is approved, the overall response time of the leakage monitoring system should be sufficient to support the LBB analysis procedures. Overall response time includes transport delay time and instrument response time.

In letter dated November 27, 2018, the licensee stated that a DC Cook (CNP), Unit 1, leakage detection capability calculation demonstrates the capability to detect a 0.8 GPM RCS leak within one hour which is valid for leaks in the accumulator piping. The licensee credits the particulate containment atmosphere radioactivity monitor in this calculation.

Requests:

a) Explain how the CNP, Unit 1 detection calculation demonstrates the capability to detect a 0.8 GPM leak within one hour throughout the operating cycle for leaks in the accumulator piping. The response should include how the licensee satisfactorily addresses uncertainties of the leakage detection capability introduced by the following factors,

    1. Proximity of the particulate radiation leak sensor to the accumulator piping, and,
    2. The effects of piping insulation.

b) In considering NRC IN 2005-024 and RG 1.45, Revision 1, regarding the use of realistic activity levels specified, the NRC staff considers that the licensee's current operating values of degassed activity with no known nuclear fuel leaks and average current noble gas activity, should be used for the LBB leak detection calculations as realistic activity levels. Please respond to the following,

    1. When demonstrating the capability of the particulate radiation detector for the LBB analysis, does the calculation use the expected realistic activity of current improved fuel and the improvements in RCS chemistry control as described above? Explain.
    2. Describe how the realistic RCS activity was determined.

c) Regarding a leak detection capability of detecting a 0.8 GPM leak, explain how the operators will be alerted by the particulate radioactivity detector.

d) Regarding a leak detection capability of detecting a 0.8 GPM leak within one hour, explain how the overall response time was factored into the CNP, Unit 1 LBB analysis.

(DRAFT) RAI-9 (rev. 1)

RG 1.45, Revision 1, states,

> "Plants should use multiple, diverse, and redundant detectors at various locations in the containment, as necessary, to ensure that the transport delay time of the leakage from its source to the detector (instrument location) will yield an acceptable overall response time. If leak-before-break (LBB) analysis is approved for the plant, the overall response time of the leakage monitoring system should be sufficient to support the LBB analysis procedures. Under certain circumstances (e.g., to support LBB for smaller diameter pipes), leakage monitoring system specifications may need to exceed the quantitative criteria in this regulatory guide."

Please respond to the following,

a) Discuss the ability of the containment sump monitors to detect a 0.8 GPM unidentified leak and thus be used as a redundant and diverse method to detect a LBB. Discuss the sensitivity and time frame to detect an unidentified leak using the sump monitoring system. Discuss how the operators will be alerted and the time to be aware of an unidentified leak of 0.8 GPM

b) In CNP, Unit 1, technical specification (TS) Surveillance Requirement (SR) 3.4.13.1, it states, “Verify RCS operational leakage within limits by performance of RCS water inventory balance.” The frequency of this requirements is in accordance with the Surveillance Frequency Control Program (SFCP).

   1) Discuss how the RCS water inventory balance, as specified in SR 3.4.13.1, can be used as a redundant and diverse method to detect a LBB.
   2) Is it reasonable to use SR 3.4.13.1 as a backup/redundant means of detecting a LBB of 0.8 GPM? Explain.
   3) Discuss the applicability/practicality and requirements of the SFCP to use the RCS water inventory balance as a method of unidentified leak detection for LBB.

c) In enclosure 2 of letter dated November 27, 2018 (footnote 3), the licensee states that the gaseous containment atmosphere radioactivity monitor is capable of detecting a 1 GPM increase in unidentified leakage within 4 hours given an RCS activity equivalent to that assumed in the design calculations for the monitor. Using realistic RCS activity levels, as stated in the guidelines of RG 1.45, Revision 1, and described in IN 2005-024,

   1) Discuss whether it is possible/reasonable for the gaseous radioactivity monitor to be used as a redundant indication for LBB. If so, discuss the sensitivity, capability and time frame of the gaseous containment atmosphere radioactivity to detect a 0.8 GPM unidentified leak and how it might be considered as a redundant backup means to qualify the LBB analysis.

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