

NRR-PMDAPEm Resource

From: George, Andrea
Sent: Thursday, April 02, 2015 3:35 PM
To: BICE, DAVID B (ANO)
Cc: CLARK, ROBERT W; PYLE, STEPHENIE L
Subject: Requests for Additional Information - 4th Round - ANO-1 P/T and LTOP Limits Update to 54 EFPY License Amendment Request - MF5292

Mr. Clark and Mr. Bice,

By application dated November 21, 2014, as supplemented by letters dated February 6, March 10, and March, 2015 (Agencywide Documents Access and Management System (ADAMS Accession Nos. ML14330A246, ML15041A065, ML15071A054, and ML15086A019, respectively), Entergy Operations, Inc. (the licensee), requested changes to the Technical Specifications (TSs) for Arkansas Nuclear One, Unit No. 1 (ANO-1).

The proposed changes revise TS 3.4.3, "Reactor Coolant System (RCS) Pressure and Temperature (P/T) Limits, TS 3.4.9, "Pressurizer," TS 3.4.10, "Pressurizer Safety Valves," and TS 3.4.11, "Low Temperature Overpressure Protection." to update the reactor coolant system (RCS) pressure and temperature (P/T) and low temperature overpressure protection (LTOP) system limits to 54 effective full power years (EFPYs), the end of the current period of extended operation.

Based on the U.S. Nuclear Regulatory Commission (NRC) staff review of the information provided, the NRC staff request for the following additional information:

1. The bases for the electromatic relief valve (ERV) requirements, contained in the application, stated that the ERV is signaled to open if the RCS pressure reaches a limit set in the LTOP actuation circuit. The LTOP actuation circuit monitors RCS pressure and determines when an overpressure condition is approached. When the monitored pressure meets or exceeds the setting, the ERV is signaled to open. The current LTOP-enabling ERV maximum lift setpoint is 460 pounds per square inch, gauge (psig). NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (ADAMS Accession No. ML070540076), Section 5.2.2, "Overpressure Protection," provides NRC staff review guidance for the application of pressure-relieving systems that function during low-temperature operation to ensure overpressure protection for the reactor coolant pressure boundary (RCPB) during low-temperature operation of the plant (startup, shutdown). Therefore, as a follow-on question to the third round RAI, the NRC staff requests that the licensee describe a limiting mass and energy addition analysis for the new LTOP ERV setpoint, at a level of detail consistent with Section 5.2.2 of NUREG-0800 (the NRC staff recognizes that ANO-1 is not an SRP plant, however, this RAI is a follow-on to the third-round RAI which did not contain a sufficient level of detail). This description should include an expanded discussion of the "standalone thermal-hydraulic model of the pressurizer" which was used to determine the rate/total increase of RCS pressure for LTOP events, as discussed on Page 16 of ANP-3300Q3P, contained in the third-round RAI response dated March 25, 2015.
2. In proposed new TS Figure 3.4.3-1, the reactor coolant pump (RCP) restrictions were modified from no RCPs allowed to be operating at < 84 deg F, ≤ 2 between 84 and 225 deg F and ≤ 3 between 225 deg F and 300 deg F to ≤ 3 between 100 deg F and 300 deg F and no RCPs allowed to be operating at < 100 deg F. Please provide a justification for this change, including any impacts on the limiting mass and energy analysis.
3. In proposed new TS Figure 3.4.3-2, RCP restrictions were modified form no RCPs allowed to be operating at < 150 deg F, ≤ 2 RCPs operating between 150 deg F and 255 deg F, to no RCPs operating at < 100 deg F and ≤ 2 RCPs operating between 100 deg F and 250 deg F. In addition, Note 5 to the figure, which restricted cooldown rate to 30 deg F in 15 hours in the temperature range of

150-180 deg F was removed. Please provide a justification for these changes, including any impacts on the limiting mass and energy analysis.

4. ASME Code, Section XI, Nonmandatory Appendix G, "Fracture Toughness Criteria for Protection Against Failure," Paragraph G-2215 states, "LTOP systems shall limit the maximum pressure in the vessel to 100% of the pressure determined to satisfy Eq. (1)." Figure 1 of the licensee's March 25, 2015 RAI response shows the licensee's proposed P-T limits calculated in accordance with Eq. (1) of G-2215 along with the LTOP setpoint curve. Explain how the proposed LTOP setpoint "limits the maximum pressure in the vessel to 100% of the pressure determined to satisfy Eq. (1)" since the LTOP pressure setpoint, as shown in Figure 1, is higher than the cooldown limits calculated in accordance with Eq. (1) of G-2215.

These draft RAIs were sent to Mr. Bice and Mr. Clark of your staff on March 25, 2015, and updated via email on April 1, 2015 (the latter update added RAI #4). This email should be treated as formal transmittal of the RAIs to Entergy. A clarification call regarding these RAIs was held on April 1, 2015. A date of response to these RAIs was agreed to be April 7, 2015, given the requested accelerated review schedule. If you have any issues meeting the agreed-to date, please email or call.

Sincerely,

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