

From: Wengert, Thomas
Sent: Friday, July 16, 2021 7:56 AM
To: Keele Jr, Riley D
Cc: nmosher@entergy.com; Clark, Robert; REID, MARK; Dixon-Herrity, Jennifer
Subject: ANO-1 and 2 - Final RAI RE: Final Response to GL 2004-02 (EPID L-2017-LRC-0000)
Attachments: ANO - Final RAI Concerning GL 2004-02.pdf

On July 9, 2021, the U.S. Nuclear Regulatory Commission (NRC) staff sent Entergy Operations, Inc. (the licensee) the draft Request for Additional Information (RAI) identified below. This RAI relates to the licensee's final response to Generic Letter 2004-02 for Arkansas Nuclear One, Units 1 and 2, as described below.

The licensee subsequently informed the NRC staff that a clarification conference call was not needed. Attached is the final RAI with "draft" removed. As agreed, please provide a response to this RAI within 90 days of this correspondence. A publicly available version of this final RAI will be placed in the NRC's Agencywide Documents Access and Management System (ADAMS).

From: Wengert, Thomas
Sent: Friday, July 09, 2021 11:44 AM
To: Keele Jr, Riley D <rkeele@entergy.com>
Cc: nmosher@entergy.com; Clark, Robert <RCLARK@entergy.com>; REID, MARK <mreid1@entergy.com>; Dixon-Herrity, Jennifer <Jennifer.Dixon-Herrity@nrc.gov>
Subject: ANO-1 and 2 - Draft RAI RE: Final Response to GL 2004-02 (EPID L-2017-LRC-0000)

By letter dated December 10, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20353A115), Entergy Operations Inc. (the licensee), submitted a final response to close Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ADAMS Accession No. ML042360586), for Arkansas Nuclear One, Units 1 and 2.

The NRC staff has determined that additional information, as described in the attached request for additional information (RAI), is required for the staff to complete its review of this application. This RAI is identified as draft at this time to confirm your understanding of the information that the NRC staff needs to complete the evaluation. If the request for information is understood, please respond to this RAI within 30 days of the date of this request.

Please contact me if you would like to set up a conference call with the NRC staff to clarify this request for information.

Tom Wengert
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REQUEST FOR ADDITIONAL INFORMATION
CONCERNING FINAL RESPONSE TO GENERIC LETTER 2004-02,
“POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY CIRCULATION
DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED WATER REACTORS”
ARKANSAS NUCLEAR ONE, UNITS 1 AND 2
DOCKET NOS. 50-313 AND 50-368

By letter dated December 10, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20353A115), Entergy Operations Inc. (the licensee), submitted a final response to close Generic Letter (GL) 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors,” dated September 13, 2004 (ADAMS Accession No. ML042360586), for Arkansas Nuclear One, Units 1 (ANO-1) and 2 (ANO-2).

The regulation in Section 50.46 of Title 10 of the *Code of Federal Regulations* requires that plants must be able to maintain adequate long-term core cooling (LTCC) to ensure that the fuel in the core can be cooled and maintained in a safe and stable configuration following a postulated accident. GL 2004-02 requested that licensees provide information confirming that their plants are in compliance with the regulation. Note that the PDF page numbers below are from the ADAMS accession files. During its review of the licensee’s submittal dated December 10, 2020, the Nuclear Regulatory Commission (NRC) staff identified additional information required to confirm the licensee’s evaluation. Provide the following information:

- 1) In Enclosure 1, on pg. 11 of 17 (PDF pg. 14), the second paragraph under test parameters appears to have one-train flow and two-train flow reversed. The velocities for one-train flow is listed as 0.008 feet per second (ft/s) (used for Test 1) and two-train as 0.004 ft/s (used for Test 2). Provide the one and two-train flow rates and state which flow rate was used for each test. State which test resulted in greater penetration.
- 2) Provide additional details on how the penetration models at plant scale were developed.
 - a. Describe how the penetration amounts determined from the testing were scaled to the plant condition for each unit.
 - b. It appears that the model depicted in Figure 3.n.1-9 (PDF pg. 16) was used for both units. Provide justification that the same model is applicable to both units even though the strainer sizes and fiber amounts are significantly different between the units.
 - c. Describe the relevance of the time scale on the x-axis of Figure 3.n.1-9. The NRC staff concluded that the axis implies time at a plant scale. Describe the assumptions used to develop the time scale or justify that it is not important to the calculations.
 - d. Describe the application of Figures 3.n.1-10 and 11 to each unit (PDF pgs. 16 and 17). Explain how the difference in strainer area between units is accounted for in the

analysis, considering that the ANO-2 strainer has approximately 1.8 times the area of the ANO-1 strainer.

- 3) In Enclosure 1, on pg. 15 (PDF pg. 18), the ANO-1 in-vessel fiber calculation credits one Reactor Building Spray System (RBSS) pump at minimum flow. Provide the basis for the assumption that one RBSS pump will start and continue to operate (not be shut off) during the period of interest for fiber accumulation at the core inlet. That is, confirm that the RBSS pumps start for large break scenarios and continue to run.
- 4) In Enclosure 2, on pg. 6 (PDF pg. 27), the ANO-2 in-vessel fiber calculation credits one Containment Spray System (CSS) pump at minimum flow. Provide the basis for the assumption that one CSS pump will start and continue to operate (not be shut off) during the period of interest for fiber accumulation at the core inlet. That is, confirm that the CSS pumps start for large break scenarios and continue to run.
- 5) The NRC staff recognizes that substantial chemical effects information was provided in the licensee's letter dated December 10, 2020, "Final Response to NRC Generic Letter 2004-02." Please also provide the WCAP-17788, "Comprehensive Analysis and Test Program for GSI-191 Closure," Test Group Number(s) that are considered representative of plant conditions for ANO-1 and ANO-2.