

## **NRR-DMPSPEm Resource**

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**From:** Wengert, Thomas  
**Sent:** Wednesday, September 19, 2018 2:15 PM  
**To:** PYLE, STEPHENIE L  
**Cc:** BICE, DAVID B (ANO); Pascarelli, Robert  
**Subject:** ANO-1 - Final RAI RE: License Amendment Request to Adopt TSTF-425, Revision 3 (EPID L-2018-LLA-0063)  
**Attachments:** ANO-1 - Final RAI Concerning TSTF-425 LAR.pdf

On September 14, 2018, the U.S. Nuclear Regulatory Commission (NRC) staff sent Entergy Operations, Inc. (Entergy) the draft Request for Additional Information (RAI) identified below. This RAI relates to the license amendment request (LAR) to relocate specific surveillance requirements frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specifications Task Force (RITSTF) Initiative 5b," for Arkansas Nuclear One, Unit 1 (ANO-1).

Entergy subsequently informed the NRC staff that the information requested by the staff was understood and that no additional clarification of the RAI was necessary. A publicly available version of this final RAI (attached with "Draft" removed and minor editorial changes made) will be placed in the NRC's Agencywide Documents Access and Management System (ADAMS). As agreed, please provide a response to this RAI within 30 days of the date of this request.

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**From:** Wengert, Thomas  
**Sent:** Friday, September 14, 2018 2:01 PM  
**To:** PYLE, STEPHENIE L  
**Cc:** BICE, DAVID B (ANO) ; Pascarelli, Robert  
**Subject:** ANO-1 - Draft RAI RE: License Amendment Request to Adopt TSTF-425, Revision 3 (EPID L-2018-LLA-0063)

By letter dated March 12, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18071A319), as supplemented by letter dated April 26, 2018 (ADAMS Accession No. ML18117A493), Entergy Operations, Inc., (Entergy), submitted a license amendment request (LAR) to relocate specific surveillance requirements frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specifications Task Force (RITSTF) Initiative 5b," for Arkansas Nuclear One, Unit 1 (ANO-1).

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the submittals and determined that additional information is required in order to complete the review. The staff's draft request for additional information (RAI) is provided as an attachment to this email. Please review and let me know if Entergy would like to have a conference call with the NRC staff to clarify this request. Also, let's discuss the timing for your response to this RAI.

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**Hearing Identifier:** NRR\_DMPS  
**Email Number:** 581

**Mail Envelope Properties** (BN6PR09MB14742CF55F39AF1057601B0E8F1C0)

**Subject:** ANO-1 - Final RAI RE: License Amendment Request to Adopt TSTF-425, Revision 3 (EPID L-2018-LLA-0063)  
**Sent Date:** 9/19/2018 2:14:48 PM  
**Received Date:** 9/19/2018 2:14:00 PM  
**From:** Wengert, Thomas

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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	2479	9/19/2018 2:14:00 PM
ANO-1 - Final RAI Concerning TSTF-425 LAR.pdf		141026

**Options**  
**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

REQUEST FOR ADDITIONAL INFORMATION  
REGARDING LICENSE AMENDMENT REQUEST TO  
RELOCATE SURVEILLANCE FREQUENCIES TO LICENSEE CONTROL  
ENTERGY ARKANSAS, INC.  
ARKANSAS NUCLEAR ONE, UNIT 1  
DOCKET NO. 50-313

By letter dated March 12, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18071A319), as supplemented by letter dated April 26, 2018 (ADAMS Accession No. ML18117A493), Entergy Operations, Inc., (Entergy), submitted a license amendment request (LAR) to relocate specific surveillance requirements frequencies to a licensee-controlled program with the adoption of Technical Specification Task Force (TSTF)-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specifications Task Force (RITSTF) Initiative 5b," for Arkansas Nuclear One, Unit 1 (ANO-1). The U.S. Nuclear Regulatory Commission (NRC) staff has determined that additional information is required to complete its review, as discussed below.

**Background**

The guidelines for technical adequacy of probabilistic risk assessment (PRA) models used in risk-informed applications are provided in Regulatory Guide (RG) 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (ADAMS Accession No. ML090410014), on PRA technical adequacy. RG 1.200 describes a peer review process utilizing American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) PRA standard RA-Sa-2009, "Standard for Level 1/ Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, Addendum A to RA-S-2008," as one acceptable approach for determining the technical adequacy of the PRA once acceptable consensus approaches or models have been established for evaluations that could influence the regulatory decision.

**Request for Additional Information (RAI)**

**PRA-RAI-01 - Facts and Observations (F&Os)**

- a) F&Os MCR A1-5890 and MCR A1-5891(Supporting Requirement IFQU-A8) – regarding the internal flooding PRA model updates.

For F&O MCR A1-5890, the peer review team noted that the internal events PRA model "properly considers both flooding impacts and random equipment failures and human errors." However, the peer review team also observed "at least one instance was identified in which a modified internal events HEP [Human Error Probability] was not properly included in the integrated model." The peer review team illustrated this observation with an example and proposed a resolution to review the process used to incorporate modified HEPs into the internal flooding model and re-quantify with "corrected HEP values." Similarly, for F&O MCR A1-5891, the peer review team also observed one instance where an HEP was identified in

flooding scenarios, but not in the flooding PRA model. The peer review team illustrated with an example and proposed a resolution to review the process used to incorporate new flooding HEPs into the internal flooding model and verify that all intended events were included. In its disposition, the licensee indicated that it would update impacted HEPs, as needed, in the Internal flooding analysis model and documentation in response to both F&Os. The licensee also concluded that the incorrect HEPs are expected to result in a “very small” changes to the flooding results.

Describe the process that incorporates the modified HEPs and new HEPs into the internal flooding model and how the licensee concluded that the impact of such changes would result in a very small change to the flooding results. Alternatively, propose a mechanism to incorporate the updates prior to implementation.

b) F&O MCR A1-3893 (SR IE-D1) regarding basic event analysis documentation

For F&O MCR A1-3893, the peer review team observed that the licensee’s approach taken for calculation of the basic event values applied the CAFTA calculation method that produced probabilities (calculation method 3) rather than frequencies (calculation method 1) within support system initiating event fault trees. The disposition to F&O MCR A1-3893 states that resolution of the F&O is only a documentation issue and implies that licensee’s PRA model logic had the correct calculation type, but the fault tree result was a frequency. The licensee also states that the initiating event underwent extensive revisions and that a very small change to the results is expected.

It not clear to NRC staff how the disposition addresses the F&O, given that the licensee did not provide clarification of the approach used.

- i. Summarize the revisions that were made to initiating event fault tree (IEFT) models in the Revision 5 model update.
- ii. Explain how the model produced a frequency result or propose a mechanism to incorporate the appropriate method prior to implementation.

c) F&O MCR A1-5894 (IFQU-A7 ) regarding dependency analysis seed value

The finding implies that the HFE values in the dependency analysis were not seeded with high enough values to ensure inclusion of all relative combinations. The disposition states, “[t]he impacted HFEs will be updated as needed in the Internal Flooding Assessment (IFA) model and documentation.” Regarding “Importance to Application,” the licensee states that the HEP seed values are expected to have minimal or no impact on the flooding results, but are expected to be assessed in case-by-case Surveillance Testing Interval (STI) evaluations.

- i. Summarize how the new seed values were selected and clarify how the process is conservative with the guidance.
- ii. Explain how higher seed values have only a minimal or no impact on the results.
- iii. If the licensee concludes that this change has an impact on the flooding results and the application, then propose a mechanism to ensure the appropriate HEP values are implemented in the PRA model used for STI calculations prior to program implementation.

d) F&O MCR A1-5886 (SRs IFPP-B3, IFEV-B3, IFQU-B3, IFSN-B3, IFSO-B3, and IFQU-A7) - regarding key assumptions and uncertainties

This finding states, in part, that the flood area uncertainties have the potential for leakage through penetrations that are not sealed as designed. In several places in Attachment 2 of the LAR, it states,

As part of the PRA evaluation for each STI change request, sensitivity cases are expected to be explored for areas of uncertainty associated with unresolved items (peer review findings for ASME/ANS PRA Standard CC II or plant changes) that would impact the results of the STI change evaluation, prior to presenting the results of the risk analysis to the IDP [Integrated Decision-making Panel].

- i. Describe the approach used to identify and characterize the “key” assumptions and “key” sources of uncertainty in the ANO-1 Surveillance Frequency Control Program (SFCP) that will “be explored for areas of uncertainty.” The description should contain sufficient detail to identify: (1) whether all assumptions and sources of uncertainty in the failure probabilities of the affected SSCs were evaluated to determine whether they were “key”; and (2) define the criteria used to determine whether the modeling assumptions and sources of uncertainty were considered “key.”
- ii. Explain how the approach adequately resolves the deficiencies identified in F&Os IFPP-B3, IFEV-B3, IFQU-B3, IFSN-B3, IFSO-B3, and IFQU-A7.
- iii. Clarify which sensitivity studies referenced in Section 3.4 of Attachment 2 of the ANO-1 TSTF-425 LAR address key assumptions and key sources of uncertainty. Describe each key assumption and key source of uncertainty identified in the ANO-1 SFCP that was not provided in the ANO-1 Supplement. The description should contain sufficient detail to identify whether key assumptions used in the ANO-1 SFCP which involve any changes to consensus approaches.
- iv. Describe how each key assumption and key source of uncertainty, either identified above or presented in the ANO-1 LAR, was dispositioned for this application. If available, provide sensitivity studies that will be used to support the disposition for this application or, alternatively, provide a qualitative discussion to justify why different reasonable alternative assumptions would not affect this application.

**PRA-RAI-02 – Fire Human Reliability Analysis (HRA) Methodology Revision**

a) F&Os related to Supporting Requirements (SRs) HRA-B3, HRA-A4, HRA-D6, etc. - use of new methodology

The licensee states for these F&Os that the human reliability analysis (HRA) methodology, “was revised to follow the guidance of NUREG-1921, “EPRI/NRC-RES Fire Human Reliability Analysis Guidelines.”

- i. Justify that the HRA revision to NUREG-1921 does not constitute an ASME/ANS PRA Upgrade. Include a description of the HRA methodology originally used in the ANO-1 PRA models and how it was changed to be in alignment with guidance in NUREG-1921.

- ii. If the HRA methodology update is determined to meet the definition of a PRA upgrade per the ASME/ANS 2009 PRA standard, then clarify that a focused-scope peer review has been conducted on HRA updates determined to be PRA upgrades and that all resulting findings along with their dispositions have been provided with this LAR.

### **PRA-RAI-03 - External Events/Hazards**

Attachment 2, Section 3.5 of the LAR does not explain how the risk from external hazards evaluated in the ANO-1 Individual Plant Examination of External Events was updated to reflect new information, when used in performing a qualitative or bounding analysis in support of STI extension evaluations in accordance with Nuclear Energy Institute (NEI) 04-10, Revision 1, "Risk-Informed Technical Specifications Initiative 5b Risk-Informed Method for Control of Surveillance Frequencies," Section 4, Step 10 (ADAMS Accession No. ML071360456).

Describe the process for monitoring for and incorporating new information into the qualitative or bounding analyses performed for external hazards. Include justification that this process is sufficient to support the Surveillance Frequency Control Program (SFCP) and reflect the as-built as-operated plant configuration. Specifically, describe monitoring for and incorporating new information for the high winds and tornado, hurricane, external flooding, and seismic hazards analyses such as the need to update the site-specific ground motion response spectra.

### **PRA-RAI-04 – Assumptions for Time Related Failure Contributions**

NEI 04-10, Revision 1, Section 4.0, Step 8, states:

The risk impact of a proposed STI adjustment shall be calculated as a change of the test-limited risk (see Regulatory Guide 1.177, Section 2.3.3). Since the test-limited risk is associated with failures occurring between tests, the failure rate that shall be used in calculating the risk impact of a proposed STI adjustment is the time-related failure rate associated with failures occurring while the component is in standby between tests (i.e. risk associated with the longer time to detect standby stress failures).

Describe how the ANO-1 SFCP will address the standby time-related contribution for extended surveillances.