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PNP 2018-052

November 16, 2018

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Supplement to License Amendment Request – Application to Revise Technical Specifications to Adopt TSTF-425, Revision 3, *Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b*

Palisades Nuclear Plant
Docket 50-255
Renewed Facility Operating License No. DPR-20

- REFERENCES:**
1. Entergy Nuclear Operations, Inc., PNP 2018-025, “License Amendment Request – Application to Revise Technical Specifications to Adopt TSTF-425, Revision 3, *Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b*,” dated September 27, 2018 (ADAMS Package Accession Number ML18270A320)
 2. NRC letter, “Palisades Nuclear Plant – Supplemental Information Needed for Acceptance of Requested Licensing Action Re: Amendment Request to Revise Technical Specifications to Adopt TSTF-425, Revision 3 (EPID L-2018-LLA-0258)”, dated November 8, 2018 (ADAMS Accession Number ML18309A134)

Dear Sir or Madam:

In Reference 1, Entergy Nuclear Operations, Inc. (ENO) submitted a license amendment request (LAR) to adopt TSTF-425 Revision 3, *Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b*.

In Reference 2, the U.S. Nuclear Regulatory Commission (NRC) notified ENO that the NRC staff performed an acceptance review of the LAR in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-109, Revision 2, “Acceptance Review Procedures,” and concluded that the supplemental information delineated in the enclosure to the letter is needed to enable the staff to make an independent assessment regarding the acceptability of the proposed amendment request.

ENO is providing the needed supplemental information in the attachment.

This letter identifies no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct. Executed on November 16, 2018.

Sincerely,

A handwritten signature in black ink that reads "Mandy K. Halter". The signature is written in a cursive style with a large, prominent "M" and "H".

MKH/jse

Attachment: Supplemental Information for License Amendment Request – Application to Revise Technical Specifications to Adopt TSTF-425, Revision 3, *Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b*

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades USNRC

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ATTACHMENT

**Supplemental Information for License Amendment Request –
Application to Revise Technical Specifications to Adopt TSTF-425, Revision 3,
*Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical
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6 pages follow

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In Reference 1, Entergy Nuclear Operations, Inc. (ENO) submitted a license amendment request (LAR) for Palisades Nuclear Plant (PNP). The proposed amendment would modify the PNP technical specifications (TSs) by relocating specific surveillance frequencies to a licensee-controlled program consistent with Technical Specifications Task Force (TSTF) Traveler TSTF-425, “Relocate Surveillance Frequencies to Licensee Control - RITSTF [Risk-Informed TSTF] Initiative 5b,” Revision 3, 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.”

In Reference 2, the U.S. Nuclear Regulatory Commission (NRC) staff performed an acceptance review of the LAR in accordance with the Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-109, Revision 2, “Acceptance Review Procedures,” dated January 16, 2017 (ADAMS Accession No. ML16144A521), and determined that the application is unacceptable for review with opportunity to supplement because it is missing a significant analysis and, therefore, is lacking completeness of scope. Specific missing analysis is described below.

NEI 04-10, Revision 1, states that:

Plants implementing TSTF-425 shall evaluate their PRAs in accordance with this regulatory guide [RG 1.200, Revision 2¹]. The RG specifically addresses the need to evaluate important assumptions that relate to key modeling uncertainties (such as reactor coolant pump seal models, common cause failure methods, success path determinations, human reliability assumptions, etc). Further, the RG addresses the need to evaluate parameter uncertainties and demonstrate that calculated risk metrics (e.g., CDF and LERF) represent mean values. The identified “Gaps” to Capability Category II requirements from the endorsed PRA standards in the RG and the identified key sources of uncertainty serve as inputs to identifying appropriate sensitivity cases.

Regulatory Guide (RG) 1.200, Revision 2, states that the LAR should include,

... [a] discussion of the resolution of the peer review (...) findings and observations that are applicable to the parts of the PRA [probabilistic risk assessment] required for the application [including] a discussion of how the PRA model has been changed [or] a justification... that demonstrates the accident sequences or contributors significant to the application decision were not adversely impacted (...) by the particular issue.

¹ Regulatory Guide 1.200, Revision 2, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” Revision 2, March 2009 (ADAMS Accession No. ML090410014).

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NRC Supplemental Information Needed - #1

Several application-specific impacts of “open” peer review facts and observations (F&Os) for the PNP internal events and internal flooding PRA models were addressed in part by the following statement: “For those STIs [surveillance test intervals] on which this finding is determined to have a potential impact, the effect is expected to be assessed in the change evaluations for the affected STIs.” A few of these F&Os appear to pertain to systemic topics such as common cause failure (CCF) modeling (e.g., SY-B3-01) and human reliability analysis (HRA) dependency analysis (e.g., HR-G7-01 and QC-C1-07). The licensee’s assessments of application-specific impacts for open F&Os are not sufficient to enable the NRC staff to determine how the identified “gaps” from the PRA standard, as clarified by RG 1.200, Revision 2, will be used to identify appropriate sensitivity cases per the guidance described in NEI 04-10, Revision 1. Therefore, there is not sufficient information for the NRC staff to conclude that the dispositions of each open F&O assessed in this manner will be adequate to support the application.

To address this completeness of scope item, for each of the F&Os SY-B3-01 (related to CCF modeling), HR-G7-01 and QC-C1-07 (related to HRA dependency analysis), QU-A3-01 (related to intersystem loss of coolant accident and state-of-knowledge correlation), and LE-C2 (related to plant-specific HRA evaluation on Level 2 HRA events):

- i. resolve the F&O and provide a description of its resolution, or
- ii. provide a detailed justification of why the F&O has no impact on the application, or
- iii. describe and justify the evaluation which will be performed on a case-by-case STI basis to address the impact of each unresolved F&O.

ENO Response to Supplemental Information Needed - #1

ENO is currently in the process of updating the full power internal events (FPIE) model. This update will address and close findings SY-B3-01, HR-G7-01, QU-C1-01, and QU-A3-01 in accordance with guidance provided by the independent F&O closure review team as noted in Attachment 2, Table 2, of the PNP LAR. Once the model update is complete, the revised model will be used in surveillance test interval (STI) evaluations. [Note: the above NRC letter reference to QC-C1-07 should be QU-C1-01.]

With respect to CCI finding LE-C2, ENO does not intend to develop plant specific HRAs for Level 2 sequences. However, if a STI increase has the potential for more than a negligible large early release frequency (LERF) impact (e.g., containment isolation valves), cutsets and importance measures will be reviewed to assess the impact of Level 2 specific HRAs. Important Level 2 HRAs will be evaluated by adjusting their human error probability (HEP) values to assess their impact on Δ LERF. If the analysis is found to be sensitive to these values, a plant specific Level 2 HRA or bounding HEP value (i.e., a value that produces a bounding Δ LERF) may be developed if needed to support the STI evaluation.

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NRC Supplemental Information Needed - #2.a.

The NRC staff also identified two completeness of scope items related to the PNP internal events and internal flooding PRA peer-review. These items along with requested licensee action to address these items are described below.

- a. The PRA Standard,² which is endorsed with certain clarifications and qualifications by RG 1.200, Revision 2, defines a PRA upgrade as, “the incorporation into a PRA model of a new methodology or significant changes in scope or capability that impact the significant accident sequences or the significant accident progression sequences...” The PRA Standard further states that, “upgrades of a PRA shall receive a peer review in accordance with the requirements specified in the Peer Review Section of each respective Part of this Standard, but limited to aspects of the PRA that have been upgraded.”

Attachment 2, Section 3.2.2, of the LAR, states that, “... none of the changes made to the PNPS [PNP] PRA constituted an upgrade, while one change implemented in response to a suggestion was considered a new PRA method.” Since incorporation of a new methodology into a PRA constitutes a PRA upgrade and thus requires a PRA peer review, provide the following:

- i. Describe the new method identified in the internal events and internal flooding PRA.
- ii. Describe and justify how this method in the internal events and internal flooding PRA was peer reviewed.
- iii. Provide any F&Os that resulted from the peer review related to this method, along with a disposition of each F&O for the application.

ENO Response to Supplemental Information Needed - #2.a.

A potential new method was used to disposition a suggestion related to standard element SC-A5 from the FPIE RG 1.200, Revision 2, peer review team. ENO does not intend to pursue incorporation of the suggested F&O into the PRA model. The suggestion from the review team stated:

“Palisades uses 24 hours as the default mission time for all sequences that end in a stable end state. This can be potentially overly conservative for some sequences such as LOOP sequences when power is not recovered by 4 hours. A recovery factor considering the convolution of EDG FTR with offsite power was used but did not account for increased time for recovery as a function of the time that the EDG could run before

² ASME/ANS PRA Standard ASME/ANS RA-Sa-2009, “Addenda to ASME/ANS RA S 2008, Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications.”

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failure. Using 24 hours for FTR in some sequences overestimates the importance of some events. Potentially adjust the EDG FTR recovery factor to credit the increased time available for recovery of offsite power as a function of how long the EDG runs before failure.”

ENO responded to this suggestion by developing plant specific time dependent recovery factor models for station blackout sequences. Implementation of the recovery factors in the post-quantification processing resulted in a reduction in cutset frequency of approximately 2% to 15% for a specific subset of cutsets (e.g., one emergency diesel generator (EDG) starts but the other fails to run, both EDGs start and later fail to run, etc.). Given the small subset of cutsets to which the recovery factors were applicable, this resulted in a negligible impact on the overall model results.

Due to this minimal impact and the added complexity of maintaining and updating these models, the recovery factors are not included in the PNP current model of record. ENO does not intend to include these recovery factors in future models or use for STI evaluations, and hence there will be no new methodology or upgrade to the PRA with respect to this F&O in regards to this application.

NRC Supplemental Information Needed - #2.b.

F&Os HR-G7-01 and QC-C1-07 are related to HRA dependency analysis in the internal events and internal flooding PRA. For HR-G7-01, the independent assessment team noted that, “While the process for HRA combination was described in the HRA document at the time of the peer review, no HRA combinations were available to indicate how the method was applied and how adjustments in the HRA combinations were made ...” Similarly, the independent assessment team noted that for QC-C1-07, “... the Review Team considered that the method had been reviewed. However, the implementation of the method did not meet the standard requirements for SR HR-G7, so that Finding remains open, and as a result, this Finding also remains open.” Therefore, it is not readily apparent to the NRC staff whether implementation of the HRA dependency analysis was peer-reviewed in accordance with RG 1.200, Revision 2 and the PRA Standard. To address this concern:

- i. Describe how the HRA dependency analysis in the internal events and internal flooding PRA was peer reviewed.
- ii. Provide any F&Os that resulted from the peer review of the HRA dependency analysis along with a disposition of each F&O for the application.

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ENO Response to Supplemental Information Needed - #2.b.

The methodology for the PNP human error dependency analysis was peer reviewed and accepted during the RG 1.200, Revision 2, peer review. However, only a sample of preliminary results was available to the peer review team which resulted in the finding. Subsequently, ENO fully implemented the peer reviewed methodology into the model of record, but the final results have not been peer reviewed. Based on the limited sample size available during the original peer review and the F&O closure team’s observation that several non-standard assumptions may have less than complete justification, the F&O closure team determined the original finding should be left open.

ENO is currently in the process of updating the FPIE model. As part of this update, ENO is updating its implementation and methodology for human error dependency to conform to generally accepted industry methods. After the PRA is updated, ENO plans to have the implementation and results of the human error dependency analyses independently peer reviewed (focused-scope peer review) during the first quarter of 2019. As the focused scope peer review will be limited to the review of standard supporting requirements for which there are currently only two open findings (e.g., those related to the implementation of human error dependency analysis), it is not expected that additional F&Os will be received from this review. The revised model will be used to complete STI evaluations.

ENO Additional Supplemental Information for the LAR

In addition to the information provided above, ENO is also providing the following supplemental information regarding model impacts of National Fire Protection Association (NFPA) 805 modifications and peer review findings:

- During the fall 2018 refueling outage, PNP is installing a number of plant modifications for NFPA 805 implementation that impact the PRA model. The PNP model infrastructure allows for enabling or disabling of these modifications as needed to ensure the model reflects the current plant, as-built and as-operated. When performing STI evaluations, the PNP model will only credit NFPA 805 modifications that are currently installed and reflected in current plant procedures.
- Several findings provided in Table 2, Attachment 2 of the PNP LAR were described as needing additional documentation only to resolve; specifically IE-C2-01 (related to plant-specific initiating events data), IE-C6-01 (related to screening criteria for initiators), SY-B5-02 (related to modeling of risk-significant manual valves), SY-B12-01 and SY-B12-02 (related to modeling support system dependencies), IFSO-A4-01 (related to identification and characterization of internal flooding mechanisms), IFSN-A3-01 (related to identification of automatic or operator responses to flood propagation), and QU-D1-01 (comparison of model results to similar plants).

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PNP expects to fully resolve the findings described above by updating PRA documentation only; model logic or data changes are not expected to be necessary. However, if it is found during the documentation update process a finding cannot be resolved with only additional documentation, appropriate model changes will be implemented per ENO PRA maintenance practices in the next PRA update prior to performing any STI evaluations.

References

1. Entergy Nuclear Operations, Inc., PNP 2018-025, “License Amendment Request – Application to Revise Technical Specifications to Adopt TSTF-425, Revision 3, *Relocate Surveillance Frequencies to Licensee Control – Risk Informed Technical Specification Task Force (RITSTF) Initiative 5b*,” dated September 27, 2018 (ADAMS Package Accession Number ML18270A320)
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