

From: Drake, Jason
Sent: Friday, July 15, 2022 10:49 AM
To: Lewis, John
Cc: Mackaman, Clyde D; Couture III, Philip; HARRIS, ALAN J; Gaston, Ronald William; Mahan, Cecil; Dixon-Herrity, Jennifer; Pascarelli, Bob; Waters, Michael
Subject: FOR REVIEW: Draft RAIs to
Attachments: Waterford TSTF-505 and 50.69 RAIs_DRAFT_07142022 (2).docx
Importance: High

John,

Attached are **draft** RAIs to the Entergy Operations, Inc license amendment requests (LARs) submitted by letters dated December 18, 2020, and February 8, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML20353A433 and ML21039A648, respectively), as supplemented by letters dated April 25, 2022, April 8, 2021, and May 16, 2022 (ADAMS Accession No. ML22115A062, ML21098A262, and ML22136A310, respectively) for the use of a risk-informed process for the categorization and treatment of structures, systems, and components and the risk-informed completion time (RICT) program at Waterford Steam Electric Station, Unit 3 (Waterford 3).

Please review to ensure that there is **no proprietary information** contained in the draft RAIs, that the questions are understandable, that the regulatory basis is clear and to determine if the information was previously docketed. Please let me as soon as possible if a clarification phone call is needed and/or if a response should be expected within **30 days** from the issuance of these as final RAIs.

Regards,

Jason Drake
Project Manager
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
Phone: (301) 415-8378

Hearing Identifier: NRR_DRMA
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Sent Date: 7/15/2022 10:48:41 AM
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From: Drake, Jason

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Options

Priority: High
Return Notification: No
Reply Requested: No
Sensitivity: Normal
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REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST FOR APPLICATION TO ADOPT 10 CFR 50.69,
“RISK-INFORMED CATEGORIZATION AND TREATMENT OF STRUCTURE, SYSTEMS AND
COMPONENTS FOR NUCLEAR POWER REACTORS”
AND
LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATIONS
TO ADOPT TSTF-505, REVISION 2,
“PROVIDE RISK INFORMED EXTENDED COMPLETION TIMES – RITSTF INITIATIVE 4b”
ENTERGY OPERATIONS, INC.
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NO. 50-382

By letters dated December 18, 2020, and February 8, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML20353A433 and ML21039A648, respectively), as supplemented by letters dated April 25, 2022, April 8, 2021, and May 16, 2022 (ADAMS Accession No. ML22115A062, ML21098A262, and ML22136A310, respectively), Entergy Operations, Inc (Entergy, the licensee) submitted license amendment requests (LARs or applications) for the use of a risk-informed process for the categorization and treatment of structures, systems, and components and the risk-informed completion time (RICT) program at Waterford Steam Electric Station, Unit 3 (Waterford 3), respectively. The LAR dated December 18, 2020 would modify the Waterford 3 licensing basis, by the addition of a license condition, to allow for the implementation of the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.69, “Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors.” The LAR dated February 8, 2021, would modify technical specification (TS) requirements to permit the use of RICTs with the implementation of Nuclear Energy Institute (NEI) 06-09, Revision 0-A, “Risk-Informed Technical Specifications Initiative 4b: Risk-Managed Technical Specifications (RMTS) Guidelines.

The U.S. Nuclear Regulatory Commission (NRC) staff reviewed the LARs, as supplemented and determined that additional information is needed to complete its review. The NRC staff’s request additional information (RAI) is listed below

Division of Risk Assessment (DRA)
Probabilistic Risk Assessment (PRA) Licensing Branch A (APLA) Questions

APLA RAI 01 (Supplement) – Open Internal Events PRA Facts and Observations (F&O)

In attachment 3 of the April 25, 2022, supplement and enclosure 1 of the May 16, 2022, supplement, the licensee stated that subsequent to the LAR submittals that a focused-scope peer review was conducted on human reliability supporting requirements (SRs) in December 2021 that resulted in four open F&Os. Tables A3-2 and E2-2 of each supplement, respectively, identifies and provides dispositions to these four F&Os.

- a) F&O HR 7-1 related to SR HR-G6 not met, regarding reasonableness checks for post-initiator human error probability (HEP) quantifications, identified that plant history and

experience do not appear to have been considered in the review of post-initiator human failure events (HFEs) and their final HEPs. The licensee stated in the disposition that this review was performed in its previous cutset review process that included operational personnel. However, the licensee did not describe how the cutset review specifies, as part of its reasonableness check of the human failure probability, review of plant history and experience in accordance with the requirement of the 2009 American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) PRA Standard SR HR-G6.

- i. Provide details on how the cutset review process included review of both plant history and experience and were assessed to meet SR HR-G6.
 - ii. Alternatively, to part (i), propose a mechanism to resolve the F&O using an accepted NRC process ("U.S. Nuclear Regulatory Commission Acceptance on Nuclear Energy Institute Appendix X to Guidance 05-04, 07-12, and 12-13, Close-out of Facts and Observations (F&Os)"; ML17079A427), prior to the implementation of the 10 CFR 50.69 categorization process and the RICT.
- b) F&O HR 7-4 related to SR HR-I2 not met, identified a general issue with discrepancies between parts of the human reliability analysis (HRA) notebook and the data analysis notebook. Additionally, the peer review team noted a lack of documentation supporting the licensee's pre-initiator HRA analysis. Documentation also appears to be an issue for the HRA post-initiator analysis noting a lack of basis for the analysis in the HRA calculator. The licensee states in the disposition that this is only a documentation issue and does not impact the application. Associated F&Os HR 1-2 (related to SR HR-C2) and HR 7-3 (related to SR HR-I1) appear to identify similar concerns. The NRC staff notes that with no apparent documentation supporting the licensee's HRA analysis, it is unclear how the HRA meets the applicable SR from the 2009 ASME/ANS PRA Standard.
- i. Provide details of how the Waterford 3 HRA analysis is in alignment with approved PRA standards. Specifically:
 - a. Explain how the licensee ensured consistency between the data analysis notebook and HRA notebook.
 - b. Explain how the review of the pre-initiator HFEs for impact to multiple trains or systems was performed and whether additional mechanisms were discovered.
 - c. Explain the licensee's approach to ensure consistency between the HRA calculator and HRA notebook. In the response, address the specific examples identified in the F&O by the peer review team.
 - ii. Alternatively, to part (i), propose a mechanism to resolve the F&O, using an accepted NRC process ("U.S. Nuclear Regulatory Commission Acceptance on Nuclear Energy Institute Appendix X to Guidance 05-04, 07-12, and 12-13, Close-out of Facts and Observations (F&Os)"), prior to the implementation of the 10 CFR 50.69 categorization process and the RICT program.

Division of Engineering and External Hazards (DEX)
Instrumentation and Controls Branch (EICB) Questions

EICB RAI 01 – Waterford 3 TSTF-505 Audit Item ID 0053 (EICB 1)*

In section 3.1.2.3, “Evaluation of Instrumentation and Control Systems,” of the TSTF-505 Revision 2, model application, the NRC clarifies the basis of the NRC staff’s safety evaluation is to consider “a number of potential plant conditions allowed by the new TSS” and to consider “what redundant or diverse means were available to assist the licensee in responding to various plant conditions.” Traveler TSTF-505, Revision 2, states that at least one redundant or diverse means (e.g., other automatic features or manual action) to accomplish the safety functions (e.g., reactor trip, safety injection, or containment isolation) remain available during the use of the RICT.

In addition, Regulatory Guide 1.174, Revision 2, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis.” (ML100910006) states the licensee should “assess whether the proposed LB change meets the defense-in-depth principle” by not over-relying on programmatic activities as compensatory measures associated with the change in the LB.

Please demonstrate the consistency with the TSTF-505, Revision 2 model SE by identifying the diverse means for each affected Instrumentation and Controls function under each postulated accident.

If the sole diverse mean is identified as “manual actuation”, please confirm that these “manual actuations” are modeled in PRA, defined in Waterford 3 operation procedures to which operators are trained, and describe how the completion times associated with these actions are evaluated as adequate.

*The initial response to this question has been placed in the Certrec Portal by the licensee for NRC review. A formal response is now requested to be placed on the docket via the licensee’s RAI response.