



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 22, 2016

Site Vice President, Operations
Entergy Operations, Inc.
Waterford Steam Electric Station, Unit 3
17265 River Road
Killona, LA 70057-3093

SUBJECT: WATERFORD STEAM ELECTRIC STATION, UNIT 3 – REQUEST FOR
ADDITIONAL INFORMATION REGARDING THE RISK-INFORMED
SURVEILLANCE REQUIREMENTS LICENSE AMENDMENT REQUEST (CAC
NO. MF6366)

Dear Sir or Madam:

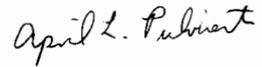
By letter dated June 17, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. 15170A121), Entergy Operations, Inc. (the licensee), submitted a license amendment request, which proposed changes to the technical specifications for Waterford Steam Electric Station, Unit 3 (WF3). Specifically, the licensee proposed to adopt U.S. Nuclear Regulatory Commission (NRC)-approved Technical Specification Task Force (TSTF) Standard Technical Specifications Change traveler TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk Informed Technical Specifications Task Force] Initiatives 5b" which is an approved change to the Standard Technical Specifications (ADAMS Accession No. ML090850642).

The NRC staff has reviewed the information provided by the licensee and determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with Ms. Leia Milster and others of your staff on January 13, 2016, it was agreed that you would provide a response within 45 days from the date of this letter. Please provide the additional information requested in the enclosure within 45 days of the date of this letter.

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If you have any questions, please contact me at 301-415-1390 or via e-mail at April.Pulvirenti@nrc.gov.

Sincerely,



April L. Pulvirenti, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
Request for Additional Information

cc w/encl: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATIONS

TO ADOPT TSTF-425, REVISION 3, "RELOCATE SURVEILLANCE FREQUENCIES

TO LICENSEE CONTROL – RITSTF INITIATIVE 5B

ENTERGY OPERATIONS, INC.

WATERFORD STEAM ELECTRIC STATION, UNIT 3

DOCKET NO. 50-382

By letter dated June 17, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. 15170A121), Entergy Operations, Inc. (Entergy, the licensee) submitted a license amendment request (LAR), which proposed changes to the technical specifications for Waterford Steam Electric Station, Unit 3 (WF3). Specifically, the licensee proposed to adopt U.S. Nuclear Regulatory Commission (NRC)-approved Technical Specification Task Force (TSTF) Standard Technical Specifications (STS) Change traveler TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF [Risk-Informed Technical Specification Task Force] Initiatives 5b," which is an approved change to the Standard Technical Specifications (ADAMS Accession No. ML090850642). The proposed changes relocate specific surveillance frequencies to a licensee-controlled program based on the approved methodology included in Nuclear Energy Institute (NEI) 04-10, Revision 1 "Risk-Informed Technical Specifications Initiative 5b, Risk-Informed Method for Control of Surveillance Frequencies" (ADAMS Accession No. ML071360456), which was approved on September 19, 2007 (ADAMS Accession No. ML072570267).

The NRC staff has reviewed the information provided by the licensee in the June 17, 2015, application and determined that the following additional information is needed to complete its review:

Request for Additional Information (RAI)

RAI-1

Several "gaps" identified in Table 3-1, "Status of Identified Gaps to Capability Category II of the ASME [American Society of Mechanical Engineers] PRA [Probabilistic Risk Assessment] Standard," of Attachment 2, "Documentation of PRA Technical Adequacy," of the LAR by letter dated June 17, 2015, are dispositioned as having "little/no impact on STI [surveillance test interval] evaluations" without explaining how the disposition was determined. As resolution of these "gaps" may be necessary inputs to determine the technical adequacy of the internal flooding probabilistic risk assessment (IFPRA) model, address the following:

Enclosure

A. Gap #1 states, in part:

Although required by this SR [surveillance requirement], no evaluation of individual component failure modes, human-induced mechanisms, or other events that could release water into the area were identified.

The licensee's evaluation of this "gap" is that it has little or no impact on STI evaluations because the assumption of treating all flooding sources as a guillotine break is conservative. Treating all identified flooding sources conservatively does not address the gap issue and the LAR submittal does not appear to have sufficient information to indicate that all flooding sources have been identified and evaluated (e.g., human-induced over-filling of tanks or diverting flow through openings, inadvertent actuation of the fire-suppression system, etc.). Given that excluded flooding sources listed in Gap #1 contribute to underestimation of the internal flooding risk and could exclude risk contributors that impact the STI calculations, justify why the PRA is of sufficient quality for the STI application.

- B. Gap #2 indicates that there are assumptions made in the IFPRA for which engineering calculations are not available. The licensee's evaluation of this "gap" is that these unsupported assumptions have little or no impact on the IFPRA. Given that unsupported assumptions should be evaluated to determine whether they contribute to underestimation of internal flooding risk, justify why the PRA is of sufficient quality for the STI application.
- C. Gaps #3 and #6 state that some locations have been excluded from the modeling (i.e., the Fire Water pump house and condensate polisher building). Given that excluding these locations could contribute to underestimation of the internal flooding risk and could result in exclusion of risk contributors that impact STI calculations, justify why the PRA is of sufficient quality for the STI application.
- D. Gap #4 states that a reduction factor was used inappropriately to convert the rupture flow rates to spray flow rates. Given that the use of the reduction factor could contribute to underestimation of the internal flooding risk and impact on STI calculations, justify why the PRA is of sufficient quality for the STI application.
- E. Gap #8 states that numerical uncertainties were not propagated as part of IFPRA quantification. In accordance with the American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) RA-Sa-2009, Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications, estimates of the mean core damage frequency (CDF) should account for state of knowledge correlations (SOKC). Given that not incorporating the impact of SOKC could contribute to underestimation of the internal flooding risk and impact STI calculations, justify why the PRA is of sufficient quality for the STI application.

RAI-2

The licensee utilizes the Waterford PRA model, which was peer reviewed in an Internal Events PRA peer review from August of 2009. The Facts and Observations (F&O) from this review, along with their dispositions from this review, are summarized in Attachment U of the LAR to

adopt National Fire Protection Association (NFPA) Standard 805, dated November 11, 2011 (ADAMS Accession No. ML113220230). F&O IE-C6 01, for Event Fault Tree Modeling states:

The initiating event fault tree [IE FT] modeling for these systems considers multiple failures, CCF [common-cause failure] events and routine system alignments. These IE FTs exclude many failures that are included in the systems analysis (failures of valves, breakers, etc. in redundant paths to transfer open or transfer closed; component failure rates less than 1% of the pump active failures such as sensors and transmitters; and flow diversion paths).

The disposition presented for this F&O states that these failures are omitted from the initiating event fault trees because they are passive failures that affect one path only. However, this disposition appears to apply only in the context of fire protection. Although excluding certain failures from the initiating events fault tree models does not impact fire risk, they could contribute to underestimation of internal events risk and impact STI calculations. Address each of the excluded failures cited in F&O IE-C6-01 in the context of the current license amendment request. If this F&O is not completely resolved, explain why the incomplete modeling does not impact the STI calculations.

RAI-3:

Section 3.3, "External Events Considerations," in Attachment 2 of the LAR submittal, by letter dated June 17, 2015, states, in part, that WF3 has a state-of-the-art Fire PRA model and:

Any STI related parameter changes evaluated by the internal events model can also be evaluated using the Fire model.

The submittal further states, in part, that:

The Fire PRA model will be exercised to obtain quantitative fire risk insights when a qualitative or a bounding analysis is not deemed sufficient...

The use of a qualitative or bounding analysis when a system, structure, or component is explicitly modeled and evaluated in the fire PRA is inconsistent with Section 4, "Surveillance Frequency Control Program Change Process," Step 10, "Perform Qualitative or Bounding Risk Analysis," of the NEI 04-10, Revision 1, methodology. Explain how and when the fire PRA will be used in performing the STI calculations to ensure consistency with the NEI 04-10 methodology.

RAI-4:

The LAR submittal, does not discuss how the surveillance frequency control program will assess the risk of shutdown events when evaluating STIs. Guidance on the assessment of shutdown events is provided in NEI 04-10 Section 4, Step 10. In addition, shutdown risk impact is listed as a line item in Section C of the Sample Surveillance Test Frequency Evaluation form, which references TSTF-425. Describe how the risk of shutdown events will be assessed as part of the WF3 Surveillance Frequency Control Program (SFCP) and whether and how a shutdown PRA model will be used in these assessments.

RAI-5:

Section 3.3 in Attachment 2 of the LAR submittal, states that a qualitative or bounding approach will be utilized in most cases for STI change evaluations. The submittal does not explain how the external hazards evaluated in the WF3 Individual Plant Examination of External Events are updated to reflect new information when used in performing a qualitative or bounding analysis. Discuss the process for incorporating new information in these qualitative or bounding analyses and how this process adequately supports implementation of the SFCP.

RAI-6:

In Surveillance Requirement (SR) 4.1.3.6 of Attachment 3, "Proposed Technical Specification Changes," of the LAR submittal, WF3 proposes to relocate the fixed periodic surveillance frequency into the surveillance frequency control program:

1. for when each regulating control element assembly (CEA) group and CEA group P are within the Transient Insertion Limits, and
2. for determination of the accumulated times during which regulating CEA groups or CEA group P are inserted beyond the long term steady state insertion limits but within the transient insertion limits.

However, in SR 4.1.3.6 of Attachment 4, "Revised Technical Specification Pages," on page 3/4 1-26 of the LAR submittal, WF3 has replaced the surveillance frequencies for the above, and for verification of individual CEA positions during time intervals when the power dependent insertion limit (PDIL) auctioneer alarm circuit is inoperable. This part of SR 4.1.3.6 appears to be part of a surveillance related to a specific condition ("...when the PDIL Auctioneer Alarm Circuit is inoperable ...") which should be excluded in accordance with Section 2.0, "Proposed Changes," of TSTF-425, Revision 3.

If WF3 intends to relocate the surveillance frequency for verification of individual CEA positions during time intervals when the PDIL auctioneer alarm circuit is inoperable then:

1. explain why this does not meet the exclusion, and
2. submit a revised SR 4.1.3.6 mark-up, page 3/4 1-26 of Attachment 3 to reflect the relocation.

RAI-7:

The licensee proposes to relocate the surveillance frequency for SR 4.3.2.3, which is similar to SR 4.3.1.3 in that both SRs test response times and both include an N term where N is the total number of redundant channels in a specific function. However, in the LAR submittal, Attachment 3, for SR 4.3.1.3, WF3 includes removal of the language defining the N term (i.e., "... at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function ..."). The Attachment 3 mark-ups of the LAR submittal for SR 4.3.2.3 do NOT include removal of the language defining the N term. The Attachment 4, of SR 4.3.2.3 on page 3/4 3-1 does include removal of the N term language.

If WF3 intends to remove the language defining the N term in SR 4.3.2.3, submit a revised SR 4.3.2.3 mark-up, page 3/4 3-1 of Attachment 3, showing this change.

RAI-8

The NRC staff cannot find any justification in the LAR application for the removal of the "... within the previous 62 days" language from the end of table note 3 of Table 4.3-2 on page 3/4 3-27 of Attachment 3. This part of the table note appears to be part of a surveillance related to a specific condition, which should be excluded per Section 2.0 of TSTF-425, Revision 3. Provide adequate justification for the removal of this language from the note by explaining why the words immediately before (i.e., "... during each COLD SHUTDOWN condition ...") do not make this an excluded frequency related to a specific condition (i.e., "COLD SHUTDOWN")?

Submit a revised markup of page 3/4 3-27 of Attachment 3 of the LAR application if this part of the table notation does indicate a surveillance related to a specific condition without striking the "... within the previous 62 days."

RAI-9

WF3 proposes to relocate the surveillance frequency for SR 4.7.6.3, Part b according to page 3/4 7-18a of Attachment 3 of the LAR submittal. How can this be done while allowing the language "... if not performed within the last quarter ..." to remain in the SR?

Can the surveillance frequency be potentially changed (from quarterly) in the future in the licensee-controlled document per the accepted guidance in NEI 04-10, Revision 1 with the language identified above remaining in the SR?

Either submit a markup removing the language mentioned above with adequate justification for removal or explain how the language can remain as marked in the June 17, 2015, submittal.

If you have any questions, please contact me at 301-415-1390 or via e-mail at April.Pulvirenti@nrc.gov.

Sincerely,

/RA/

April L. Pulvirenti, Project Manager
Plant Licensing IV-2 and Decommissioning
Transition Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-382

Enclosure:
Request for Additional Information

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