NRR-PMDAPEm Resource

From: Buckberg, Perry
Sent: Friday, May 27, 2016 7:54 AM
To: Frehafer, Ken
Cc: Snyder, Mike; Catron, Steve; Kilby, Gary
Subject: Request for Additional Information - St. Lucie TSTF-505 APLA - MF5372 & MF5373
Attachments: St Lucie Revised TSTF-505 APLA RAI 8 - 5-27-16.pdf

Ken,

By letter dated December 5, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14353A016), Florida Power and Light (FPL, the licensee) submitted a License Amendment Request (LAR) regarding St. Lucie Units 1 and 2. The proposed amendment would revise Technical Specifications (TS) to Implement TS Task Force (TSTF)-505, Revision 1, "Provide Risk-Informed Extended Completion Times RITSTF [Risk Informed TSTF] Initiative 4b."

The U.S. Nuclear Regulatory Commission Staff reviewed the submittal and identified areas where it needs additional information and clarification to complete its review. The Request for Additional Information (RAI) is attached. The NRC requests that the licensee respond to this RAI within 60 days of this email.

Thanks,

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Hearing Identifier: NRR_PMDA
Email Number: 2870

Mail Envelope Properties (Perry.Buckberg@nrc.gov20160527075300)

Subject: Request for Additional Information - St. Lucie TSTF-505 APLA - MF5372 & MF5373
Sent Date: 5/27/2016 7:53:46 AM
Received Date: 5/27/2016 7:53:00 AM
From: Buckberg, Perry

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Post Office:

Files	**Size**	**Date & Time**
MESSAGE	1041	5/27/2016 7:53:00 AM
St Lucie Revised TSTF-505 APLA RAI 8 - 5-27-16.pdf	128206	

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

REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST TO IMPLEMENT TSTF-505, REVISION 1,
ST LUCIE UNITS 1 AND 2
DOCKET NOS. 50-335 AND 50-389
(CAC NOS. MF5372 AND MF5373)

RAI-MF5372/73-APLA-08 R1 (PRA Functionality)

Model Application to TSTF-505, Revision 1, "Proposed Revision to the Model Application for TSTF-505, Revision 1, 'Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b'," Enclosure 1 (ADAMS ML12032A065) states:

> *This enclosure should provide a description of PRA functionality for each associated specified safety function that corresponds to each proposed Required Action that is applicable when all trains of equipment are inoperable as discussed in Section 2.3.1.10 of NEI 06-09.*

The TSTF-505 enclosure guidance is included as part of the model application because the NRC staff seeks clarity in how PRA Functionality will be used during full power operation following, "loss of a specified safety function or inoperability of all required trains or divisions of a system." Provide justification for PRA functionality for each associated specified safety function consistent with TSTF-505 as requested below:

1. To provide confidence that the defense-in-depth philosophy is maintained as the completion times (CTs) are extended, the NRC staff requests the following information for three of the defense-in-depth "circumstances" described in RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decision-making: Technical Specifications," Revision 1, May 2011.

   a. *System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system (e.g., there are no risk outliers). The licensee should consider…whether there are appropriate restrictions in place to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity.*

      Beyond prohibiting voluntary entry, the guidance on PRA Functionality in NEI 06-09 does not address how PRA Functionality should be defined when the systems, structures, and components (SSCs) normally relied on to perform a specified safety function are unavailable. Specifically, the PRA often includes alternative SSCs that could be used to fulfill a specified safety function when the SSCs referenced in the TSs are unavailable. Crediting alternative SSCs when the SSCs normally relied on are unavailable would represent a reduction in redundancy or diversity.

      i. Please confirm that SSCs credited in a PRA Functionality determination are the same SSCs relied upon to perform the specified safety function.

      ii. If a PRA Functionality determination for a loss of a specified safety function or inoperability of all required trains or divisions of a system credits alternative SSCs to replace the SSCs covered by the TS (e.g., crediting the Fire Protection system as an alternative water source), please summarize each such TS and justify how appropriate redundancy and diversity is maintained.

iii. If a PRA Functionality determination for a loss of a specified safety function or inoperability of all required trains or divisions of a system will not credit alternative SSCs to replace the SSCs covered by the TSs, then please add that constraint in TS 6.8.4 or propose an alternative location where changes would require prior NRC staff review and approval.

b. *Over-reliance on programmatic activities as compensatory measures associated with the change in the licensing basis is avoided (e.g., the change does not use high reliability estimates that are primarily based on optimistic program assumptions).*

i) Please confirm that all human actions required to achieve PRA functionality upon loss of specified safety function are modeled in the PRA (i.e., they are all explicitly proceduralized; and that they all are (1) trained on or (2) not trained on because they are so simple as to be skill of the craft).

ii) If any human actions were evaluated and credited in the PRA scenarios, but not modeled in the PRA, then:

A. Summarize the action and the evaluation.

B. Clarify why not modelling each action will have a negligible impact on core damage frequency and large early release frequency and the associated CT that will be used when the corresponding PRA Function to TS LCO/Conditions is unavailable.

C. If any other human actions are directly or indirectly credited in the CT length calculations, please provide the same information as in parts A and part B.

c. The intent of the plant's design criteria is maintained.

The intent of the design basis design criteria is that all design basis accident scenarios could be mitigated, i.e., the minimum specified safety function capability is available. To maintain this intent, PRA Functionality should not include any scenarios that allow any design basis accident initiator to proceed directly to core damage (e.g., Loss of Offsite Power/Loss of Coolant Accident). Please confirm that PRA Functionality does not include any scenarios that allow any design basis accident to proceed directly to core damage or containment failure, or identify the scenarios and justify that the intent of the design criteria is maintained and describe how the PRA functionality determination will verify these requirements are met.

2. To provide confidence that sufficient safety margins are maintained, NRC Staff requests the following information for the detailed "circumstance" described in RG 1.177.

Safety analysis acceptance criteria in the final safety analysis report (FSAR) are met or proposed revisions provide sufficient margin to account for analysis and data uncertainties (e.g., the proposed TS CT or SF change does not adversely affect any assumptions or inputs to the safety analysis, or, if such inputs are affected, justification is provided to ensure sufficient safety margin will continue to exist). For TS CT changes, an assessment should be made of the effect on the FSAR acceptance criteria assuming the plant is in the condition addressed by the

proposed CT (i.e., the subject equipment is inoperable) and there are no additional failures. Such an assessment should result in the identification of all situations in which entry into the condition addressed by the proposed CT could result in failure to meet an intended safety function.

Some TS safety functions are credited in design basis accident scenarios modeled in the PRA but are also required in other design basis accident scenarios not modeled in the internal events PRA because the other scenarios do not contribute to Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) or are not needed within the PRA mission time.

a) a) Please confirm that in order to enter a RICT on TS Loss of Function (LOF), design basis success parameters that are not modeled in the design basis accident scenarios in the internal events PRA shall be met (e.g., containment spray may be credited as decay heat removal in some plants which is modeled in the PRA. It may also provide an iodine removal function for the same plants, which is not modeled in the PRA). Please add that constraint in TS 6.8.4, or propose an alternative location where changes would require prior NRC staff review and approval. If the design basis success criteria parameters may not be met, then justify how adequate safety margins are ensured, and provide some clarifying examples of the difference between design basis success parameters and the parameters allowed by the proposed TS LOF with the RICT.

b) Please confirm there are no safety functions required to reach a safe and stable state but are not included in the PRA because they are only required after the 24 hour mission time generally used in the PRA (e.g., some alternative primary water sources may lead to excessive boron dilution after some loss-of-coolant accidents but only after at least 24 hours, so boron is not modeled in the PRA) or describe how the PRA functionality determination will provide confidence the requirements credited in design basis accident scenarios are met.

c) In Table E1-1 of its December 5, 2014, LAR, the licensee noted differences between the design basis success criteria and the PRA success criteria for certain specified safety functions. However, the response did not address how safety margin was maintained for the case of a PRA functionality determination for a loss of a specified safety function or inoperability of all required trains or divisions of a system. Please confirm that, in order to enter a RICT on TS LOF, design basis success criteria parameters shall be met for design basis accident scenarios modelled in the internal events PRA. Please add that constraint in TS 6.8.4, or propose an alternative location where changes would require prior NRC staff review and approval. If the design basis success criteria parameters may not be met, then please elaborate on how adequate safety margins are maintained, and provide some clarifying examples of adequate safety margins for where the PRA success criteria parameters (e.g., flow rates, temperature limits) differ from the design criteria.

3. Extended completion times are limited to no more than 30 days, i.e., a 30 day “backstop.” During the Audit, FPL mentioned the possibility of administratively limiting the time in total loss of function LCOs (i.e., both/all trains inoperable) to 24 hours when using a PRA functional argument. Explain how FPL will incorporate this 24 hour limit into the technical specifications.

4. Please identify any proposed TSs where a RICT is allowed upon loss of a specified safety function or inoperability of all required trains or divisions TSs condition that do not meet the following constraints:

   - Alternative SSCs cannot replace the SSCs covered by the TSs.
   - Design basis success criteria parameters shall be met for design basis accident scenarios that are not modelled in the internal event PRA.
   - Design basis success criteria parameters shall be met for design basis accident scenarios modelled in the internal events PRA.

   For every identified proposed TS that cannot meet the above constraints (for example, the TSTF-505 proposal to allow entering a RICT with less than 100% ECCS), justify how safety margins and defense-in-depth are maintained, or eliminate the proposed TS RICT entry.