From:	Galvin, Dennis
Sent:	Friday, February 26, 2021 1:45 PM
To:	Wendy Brost (webrost@stpegs.com)
Subject:	South Texas Units 1 and 2 - License Amendment Request to Revise Moderator Temperature Coefficient SRs – Audit Plan and Setup of Online Document Access (L-2021-LLA-0004)
Attachments:	STP MTC SR LAR Audit Plan L-2021-LLA-0004 2021-02-26.pdf

Ms. Brost,

By letter dated January 13, 2021 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML20134K758), STP Nuclear Operating Company (STPNOC, the licensee) submitted a license amendment request (LAR) regarding South Texas Project Unit 1 (STP). The proposed amendment would modify Technical Specification (TS) Surveillance Requirements (SRs) 4.1.1.3.a and b. and TS 6.9.1.6.b. This change is being proposed to revise the moderator temperature coefficient (MTC) SRs to allow alternative approaches to verify the MTC limit is met.

The U.S. Nuclear Regulatory Commission (NRC) staff has determined that a regulatory audit would support its review of the proposed license amendment. The audit will be conducted via online access to non-docketed information set up by the licensee and teleconferences and in accordance with the attached audit plan. The licensee is requested to provide online access to specific NRC staff and to be read-only (i.e., to establish measures to prevent the downloading, copying, printing, or otherwise storing of any documents). The audit information the NRC staff determines to be necessary to support the development of the NRC staff's safety evaluation will be requested to be submitted on the docket.

If you have any questions, please contact me at (301) 415-6256.

Respectfully,

Dennis Galvin
Project Manager
U.S Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Operating Reactor Licensing
Licensing Project Branch 4
301-415-6256

Docket No. 50-498, 50-499

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AUDIT PLAN

LICENSE AMENDMENT REQUEST TO REVISE MODERATOR TEMPERATURE COEFFICIENT SURVEILLANCE REQUIREMENTS

STP NUCLEAR OPERATING COMPANY

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKETS 50-498 AND 50-499

I. BACKGROUND

By letter dated January 13, 2021 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML21014A213), STP Nuclear Operating Company (STPNOC, the licensee) submitted a license amendment request (LAR) regarding South Texas Project Units 1 and 2 (STP). The proposed amendment would modify Technical Specification (TS) Surveillance Requirements (SRs) 4.1.1.3.a and b. and TS 6.9.1.6.b. This change is being proposed to revise the moderator temperature coefficient (MTC) SRs to allow alternative approaches to verify the MTC limit is met. The purpose of this regulatory audit is to understand details of the licensee's proposed approach for verifying the MTC, and to discuss the appropriate licensing basis based on potential limitations of the method. The audit is also intended to identify additional information that is necessary for the licensee to supplement its application for the staff to reach a licensing or regulatory decision and to establish an understanding in the area of supporting documentation to allow the staff to issue clear requests for additional information (RAIs) and for the licensee to be able to provide quality and timely responses.

II. REGULATORY AUDIT BASES

The LAR includes several sections directly related to the purpose of the audit. Section 2.3 describes the proposed change to the MTC SRs. Section 3.1 discusses the appropriate content of the TSs and procedures regarding SRs and proposes that the current STP TSs contain inappropriate information. Section 3.1 does not discuss the TS Bases, which also have appropriate information on SRs. Section 3.2 of the LAR describes the proposed verification approach. The LAR does not describe any potential limits on the applicability of the proposed MTC verification approach.

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(c), TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) SRs; (4) design features; and (5) administrative controls.

Paragraph 50.36(c)(3) of 10 CFR establishes the requirements for SRs and states:

> Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The following general design criteria (GDC) in 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” Appendix A, “General Design Criteria for Nuclear Power Plants,” are applicable to this audit.

- GDC 11 (Reactor Inherent Protection), which states that the reactor core and associated coolant systems shall be designed so that in the power operating range the net effect of the prompt inherent nuclear feedback characteristics tends to compensate for a rapid increase in reactivity.

III. REGULATORY AUDIT SCOPE AND METHODOLOGY

The audit will be conducted via the use of an online reference portal set up by the licensee and teleconferences. The audit team will view supporting analysis, calculations, and documentation associated with the licensee’s proposed MTC verification approach and licensing basis. The audit team will interact with subject matter expert(s) to discuss the MTC verification approach and licensing basis and to support the staff’s understanding of the LAR. The audit will be performed consistent with NRC Office of Nuclear Reactor Regulation Office Instruction LIC-111, “Regulatory Audits,” Revision 1, dated October 31, 2019 (ADAMS Accession No. ML19226A274).

IV. INFORMATION AND OTHER MATERIAL NECESSARY FOR THE REGULATORY AUDIT

The staff requests access to any documentation that supports the licensee’s proposed MTC verification approach, including documentation on potential limits on the applicability of the proposed MTC verification approach, and the licensing basis. This includes analysis, calculations, procedures, and documentation associated with this approach. Specific areas of discussion and relevant questions are included in Appendix A of this audit plan. To facilitate the efficient conduct of the audit, the staff requests the licensee to provide an overview of the proposed MTC verification approach, the potential limits on the applicability of the proposed MTC verification approach, and the applicable licensing basis at the beginning of the audit.

V. TEAM ASSIGNMENTS

The NRC audit team will consist of:

- Robert Beaton, Technical Reviewer
- Dennis Galvin, Project Manager
- Matthew Hamm, Technical Reviewer
- Joshua Kaiser, Technical Reviewer
- Scott Krepel, Branch Chief
- Adam Rau, Technical Reviewer

VI. LOGISTICS

The audit will be conducted using online access to relevant non-docketed information and teleconferences. The NRC staff proposes to review the available documentation upon being provided online access and provide any clarifications to the audit topics and questions as applicable and identify requests for additional documents to be made available to the NRC staff. The project manager will coordinate the teleconferences with the licensee the week of March 15,

to discuss the audit topics. The NRC staff requests the licensee provide an overview of the MTC verification approach followed by a discussion of audit discussions and topics. Additional audit teleconferences may be necessary prior to the issuance of the RAIs.

VII. Special Requests

The NRC staff requests the licensee to provide online access to relevant non-docketed information. Additional documents may be identified as the review progresses. Online access to documents is to be limited to specific NRC staff (e.g., based on NRC e-mail addresses or the use of passwords which will only be assigned to NRC staff directly involved in the LAR review on a need-to-know basis), and to be read-only (i.e., to establish measures to prevent the downloading, copying, printing, or otherwise storing of any documents). The conditions associated with the online access of documents must be maintained throughout the review process. The NRC staff who should be granted access to the portal are those listed in the “Team Assignments” section. The NRC staff will provide a request to suspend the online access to documents at the conclusion of the audit,.

VIII. DELIVERABLES

The NRC team will develop an audit summary report to convey the results. The report will be placed in ADAMS within 90 days of the completion of the final audit session. The audit information the NRC staff determines to be necessary to support the development of the NRC staff’s safety evaluation will be requested to be submitted on the docket.

Appendix A: Audit Topics and Questions

1) Beginning of Cycle MTC Measured to Predicted (M-P) Data
   a) Provide a summary of the M-P data for the following variables, including parameter and number of data points?
      i) Fuel types (including lead test assemblies)
      ii) Fuel vendors
      iii) Prediction methods
      iv) Measurement methods
      v) Plant type (also number of plants)
      vi) Measurement Date (distribution of measurements by year(s))
   b) Are there any significant trends based on any of these independent variables?
   c) Was any pruning applied to the data set before establishing the confidence interval?
   d) What criteria were used to determine whether to include data to the database (is this only data from core design calculations and startup physics tests, or other data/predictions added?)
   e) How was Doppler feedback accounted for?
2) BOC MTC Prediction
   a) Review details of how the confidence interval in M-P differences is translated to margin for predicted MTC
   b) What QA programs are in place for the BOC MTC model?
      i) Are any other startup tests performed to verify these models (particularly those preceding ITC measurement)?
      ii) Has the BOL MTC SR ever not been met?
   c) Discuss what operational parameters or indications are used to perform the surveillance.
3) End of Cycle (EOC) MTC prediction
   a) Does the method for predicting EOC MTC and EOC moderator density coefficient (MDC) differ from that described in WCAP-13749-P-A?
      i) If so, describe any differences
   b) Regarding the statement in the application “This is only valid if the measured to predicted differences (core burnup, axial and radial power distribution) are within the constraints determined by the operational allowance uncertainties discussed above.”
      i) What happens if a parameter is outside the operational allowance uncertainty? Are MTC measurements performed?
      ii) How are the operational allowance uncertainties determined?
   c) Discuss what operational parameters or indications are used to perform the surveillance.
4) Prediction going forward
   a) What does the licensee intend to change about this approach in the future?
   b) Is the method still valid if the licensee changes the plant such that relevant M-P differences are not included in the database (e.g., fuel transition)?
   c) Is the method still valid for prediction methods not in the database (e.g., new core design methods)?
   d) Will the licensee add data to the database over time?
   e) Discuss potential limits on the applicability of the MTC verification approach.
5) MTC Verification Procedure
   a) How will the procedure for the MTC verification approach be established, implemented, and maintained?
   b) Are there key attributes of the MTC verification approach that should be established, implemented, and maintained in the MTC verification procedure? If so, what are they?

6) TMC SR TS Bases
   a) Section 3.1 of the LAR states that the TS typically do not specify how a surveillance should be performed. However, some information on how a surveillance is performed is frequently provided in the TS Bases, while complete information is in procedures. While Section 3.1 of the LAR discusses the NUREG-1431, Revision 4.0, "Standard Technical Specifications Westinghouse Plants," (STS) for the MTC TSs (3.1.3), it does not discuss the corresponding NUREG-1431 TS Bases, which does describe in some detail how the MTC SR is performed.
      i) How does the proposed change to the STP TS Bases compare to the STS Bases?
      ii) What attributes of the proposed MTC verification approach are comparable to information in the STS Bases?