



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

February 13, 2018

MEMORANDUM TO: Jennifer Dixon-Herrity, Chief
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

FROM: Paul Kallan, Senior Project Manager /RA/
Licensing Branch 4
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: AUDIT PLAN FOR VOGTLE ELECTRIC GENERATING PLANT
UNITS 3 AND 4, REQUEST FOR LICENSE AMENDMENT AND
EXEMPTION: PASSIVE RESIDUAL HEAT REMOVAL HEAT
TRANSFER AND IN-CONTAINMENT REFUELING WATER
STORAGE TANK HEAT UP TEST ACCEPTANCE CRITERIA
CHANGE (LAR 17-033)

By letter dated October 6, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML17279B017), Southern Nuclear Operating Company (the licensee) requested an amendment to Combined License (COL) Numbers NPF-91 and NPF-92, for Vogtle Electric Generating Plant (VEGP) Units 3 and 4.

The requested amendment proposes changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (DCD) Tier 2 information and a COL License Condition which references a UFSAR Section impacted by one of the proposed changes.

The requested amendment proposes changes to revise the licensing basis documents to change the methodology and acceptance criteria for the in-containment refueling water storage tank (IRWST) heatup preoperational test described in UFSAR Subsection 14.2.9.1.3, item h and the passive residual heat removal heat exchanger preoperational test described in UFSAR Subsection 14.2.9.1.3, item g. These changes involve material which is specifically referenced in Section 2.D.(2) of the COLs for VEGP Units 3 and 4.

CONTACT: Paul Kallan, NRO/DNRL/LB4
301-415-2809

The Containment and Ventilation Branch staff plans to conduct an audit to gain better understanding of proposed changes to reach reasonable findings and review related documentation and non-docketed information to evaluate conformance with the Standard Review Plan or technical guidance.

Docket Nos.: 52-025 and 52-026

Enclosure:
Regulatory Audit Plan

cc: See next page

U.S. NUCLEAR REGULATORY COMMISSION AUDIT PLAN FOR VOGTLE ELECTRIC
GENERATING PLANT UNITS 3 AND 4 REQUEST FOR LICENSE AMENDMENT AND
EXEMPTION: PASSIVE RESIDUAL HEAT REMOVAL HEAT TRANSFER AND IN-
CONTAINMENT REFUELING WATER STORAGE TANK HEAT UP TEST ACCEPTANCE
CRITERIA CHANGE (LAR 17-033) DATED: FEBRUARY 13, 2018

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(Revised 01/29/2018)

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**AUDIT OF REPORTS AND CALCULATIONS IN SUPPORT OF REQUEST FOR LICENSE
AMENDMENT AND EXEMPTION RELATED TO PASSIVE RESIDUAL HEAT REMOVAL HEAT
TRANSFER AND IN-CONTAINMENT REFUELING WATER STORAGE TANK HEAT UP TEST
ACCEPTANCE CRITERIA CHANGE**

**SOUTHERN NUCLEAR OPERATING COMPANY
VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4
Docket Nos. 52-025 and 52-026**

Location: U.S. Nuclear Regulatory Commission Headquarters
Two White Flint North
11545 Rockville Pike
Rockville, Maryland 20852-2738

The purpose of the audit is to review the reports and calculations needed by staff to verify the information and conclusions in the "Request for License Amendment and Exemption: Passive Residual Heat Removal Heat Transfer and In-containment Refueling Water Storage Tank Heat Up Test Acceptance Criteria Change (LAR 17-033)" submitted by Southern Nuclear Operating Company (SNC) for the Vogtle Electric Generating Plant (VEGP), Units 3 and 4, in LAR-17-033 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17279B017).

A. Background:

In LAR-17-033, SNC proposes to changes to the Updated Final Safety Analysis Report (UFSAR) in the form of departures from the incorporated plant-specific Design Control Document (DCD) Tier 2 information and a combined license (COL) condition which references a UFSAR section impacted by one of the proposed changes.

The requested amendment proposes changes to revise the licensing basis documents to change the methodology and acceptance criteria for the in-containment refueling water storage tank (IRWST) heatup preoperational test described in UFSAR Subsection 14.2.9.1.3, item h and the passive residual heat removal (PRHR) heat exchanger preoperational test described in UFSAR Subsection 14.2.9.1.3, item g. These changes involve material which is specifically referenced in Section 2.D.(2) of the COLs for VEGP Units 3 and 4.

The NRO Projects staff determined that an audit of the reports and calculations supporting this LAR is the appropriate method to verify this proposed change rather than by issuing multiple rounds of requests for additional information (RAIs).

B. Regulatory Audit Basis

Title 10 of the *Code of Federal Regulations* (10 CFR) 52.98(f) requires NRC approval for any modification to, addition to, or deletion from the terms and conditions of a COL. This activity involves a departure from COL Appendix C information and corresponding plant-specific Tier 1 information; therefore, this activity requires an amendment to the COL. Accordingly, NRC approval is required prior to making the plant-specific changes in this license amendment request.

Enclosure

10 CFR 52, Appendix D, Section VIII.B.5.a allows an applicant or licensee who references this appendix to depart from Tier 2 information, without prior NRC approval, unless the proposed departure involves a change to or departure from Tier 1 information, Tier 2* information, or the Technical Specifications, or requires a license amendment under paragraphs B.5.b or B.5.c of the section. The proposed change to UFSAR (Tier 2) design information involves changes to plant-specific Tier 1 (and corresponding changes to COL Appendix C) information, and thus requires NRC approval for the Tier 2 and involved Tier 1 departures.

10 CFR Part 52, Appendix D, Section VIII.A.4 and 10 CFR 52.63(b)(1) govern the issuance of exemptions from elements of the certified design information for AP1000 nuclear power plants. 10 CFR 52, Appendix D, VIII.A.4 requires a Tier 1 change shall not result in a significant decrease in the level of safety otherwise provided by the design.

10 CFR Part 50, Appendix A, General Design Criterion (GDC) 35—Emergency core cooling, which requires in part, that nuclear power plants provide a system to provide abundant emergency core cooling. For the AP1000, the PRHR heat exchanger (HX) performs this function for a subset of accidents.

10 CFR Part 50, Appendix A, GDC 37—Testing of emergency core cooling system, which requires in part that the emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole under conditions as close to design as practical.

The NRC staff will follow Office of New Reactors (NRO), Office Instruction NRO-REG-108 (Revision 0), “Regulatory Audits,” (ADAMS Accession No. ML081910260) in performing the audit of the reports and calculations cited below.

C. Regulatory Audit Scope

The primary scope of this audit is the review of safety analyses referenced in LAR-17-033 to support the proposed changes to the UFSAR Tier 2 and COL Appendix C (and plant-specific Tier 1) in regards to the following text in LAR-17-033:

1. In Enclosure 1 of the LAR on page 7 of 15 the licensee proposes to:

Change, in UFSAR Tier 2 Table 3-9-17, the allowable calculated heat transfer from the PRHR heat exchanger to the IRWST water from greater than or equal to $8.11\text{E}7$ Btu/hr to greater than or equal to $8.46\text{E}7$ Btu/hr. In addition, the licensee proposes to change the IRWST temperature requirement for this test from 120°F to 80°F.

2. In Enclosure 1 on page 9 of 15, the statement is made that, in the context of the above proposed change:

“The current acceptance criteria for the two PRHR HX tests were updated following a review of the condensate return analysis. The existing PRHR heat exchanger calculation was replaced with a calculation utilizing the Chapter 15 LOFTRAN base model and PRHR heat exchanger model. This calculation made adjustments for the initial conditions of the system operability

and preoperational tests, including IRWST temperature, containment pressure, and the number of tubes plugged.”

However, there are no references to the analysis justifying the revised acceptance criteria. Therefore, the staff will review licensee-provided revised safety analysis calculations related to these heat exchanger test parameters to verify the licensee statement that the proposed revisions are "consistent with the current AP1000 plant safety analysis" as stated in LAR-17-033.

D. Information and Other Material Necessary for the Regulatory Audit

The following documents are to be made available to the NRC staff either at a local office or in the electronic reading room:

- The safety analysis calculation document supporting the proposed test condition change.

Other documents may be requested based on the staff's review of the above documents.

Appropriate handling and protection of proprietary information shall be acknowledged and observed throughout the audit.

E. Audit Team

The following are the NRC audit team members:

Paul Kallan, Senior Project Manager (NRC), Lead
Boyce Travis, Reactor Systems Engineer (NRC), Technical Reviewer

The following are the licensee contacts:

Stephanie Agee (SNC)
Amy Chamberlain (SNC)

F. Logistics

The NRC staff will address in the audit report the technical areas identified in the Regulatory Audit Scope of this audit plan along with presenting the audit outcomes.

The audit will be conducted in support of the schedule for completion of the LAR-17-033 review with entrance and exit dates to be determined. The level of effort is estimated to be a total of 80 hours to perform the audit and issue the audit report.

Depending on the availability of the licensee's documentation, the audit is planned to be conducted on February 15, 2018. The audit is intended to be conducted from the NRC Headquarters via the licensee's electronic reading room; however, the audit may be performed at a local office of the licensee, if the technical information is only retained in hard copy.

The NRC staff acknowledges the proprietary nature of the information requested. It will be handled appropriately throughout the audit. While the NRC staff will take notes that will be marked as proprietary and will not remove hard copies or copy electronic files.

G. Special Requests

If necessary, any circumstances related to the performance of the audit will be communicated to Paul Kallan (NRC) at 301-415-2809 or Paul.Kallan@nrc.gov.

H. Deliverables

At the completion of the audit, the NRC staff will prepare an audit report within 45 days that will be declared and entered as an official agency record in ADAMS. The audit outcome may be used to identify any additional information to be submitted for making regulatory decisions, and will assist the NRC staff in the issuance of RAIs (if necessary) in completing its review of LAR-17-033. With the anticipated exit telecom on February 15, 2018, the audit report will be completed by April 13, 2018.