

**U.S. NUCLEAR REGULATORY COMMISSION,
SUMMARY REPORT OF REGULATORY AUDIT
OF VOGTLE ELECTRIC GENERATING PLANT, UNIT 4
LICENSE AMENDMENT REQUEST LAR 23-005
“TIMING OF TS EFFECTIVENESS PRIOR TO INITIAL CRITICALITY”**

DOCKET NO. 52-026

I. INTRODUCTION AND BACKGROUND

By letter dated April 17, 2023, Southern Nuclear Operating Company (SNC) submitted license amendment request LAR 23-005, “Timing of TS Effectiveness Prior to Initial Criticality (LAR 23-005).” (Agencywide Documents Access and Management System Accession No. ML23107A278). SNC is the combined license (COL) holder for the Vogtle Electric Generating Plant (VEGP), Unit 4.

To facilitate the U.S. Nuclear Regulatory Commission (NRC) staff’s evaluation of LAR 23-005 and to complete its safety review in a timely manner, the NRC staff conducted an audit. The audit will ensure that information is available to support the licensing basis for the facility.

From May 15, 2023 to June 16, 2023, the NRC staff conducted an audit of the SNC documentation supporting the proposed changes described in LAR-23-005 including a review of applicable documents provided by SNC in its electronic reading room (eRR).

II. PURPOSE AND REGULATORY AUDIT BASES

The purpose of this audit is for the staff to examine and evaluate non-docketed information supporting the LAR to verify the information and conclusions in the subject LAR.

The NRC staff conducted this audit in accordance with the guidance provided in the NRC Office Instruction LIC-111, Revision 1, “Regulatory Audits.”

III. NRC AUDIT TEAM

Pravin Sawant, Nuclear Engineer

Rob Elliott, Senior Safety and Plant Systems Engineer

Henry Wagage, Senior Safety and Plant Systems Engineer

Billy Gleaves, Senior Project Manager

IV. AUDIT PREPARATION

The NRC staff prepared an audit plan that identified the information needed for this audit (ML23137A009). The audit plan requested that specific documentation to address NRC staff

review of LAR-23-005 be provided for review. SNC made available specific documents in the eRR.

V. AUDIT SCOPE

The primary scope of this audit was the review of the SNC documentation supporting the licensing changes proposed in LAR-23-005.

VI. AUDIT PERFORMANCE

The NRC staff conducted an entrance meeting by telephone conference on May 16, 2023, to discuss the performance of its audit of the SNC documentation supporting LAR-23-005. The staff conducted an exit meeting by telephone conference on June 16, 2023, to discuss the results of the audit. The topics addressed during the audit and the results of the NRC staff review are as follows:

A. Passive Containment Cooling System (PCS) not Required to Mitigate Steam Line Break (SLB) Accident in Mode 4 Prior to Initial Criticality

In Section 3.2 of LAR-23-005, it is noted that the PCS is not required to mitigate a SLB accident in Mode 4 prior to initial criticality. The NRC staff reviewed calculations in DCP_DCP_232126 Appendix E and Appendix A to understand the analysis that supported the above determination. The NRC staff has reviewed the information provided on analysis methodology, initial and boundary conditions of the analysis, and key conservative assumptions in the analysis supporting the LAR 23-005 statements.

B. Mode 4 when any Cold Leg Temperature ≤ 275 °F

In Section 3.2.1 of LAR-23-005, it is noted that when any cold leg temperature is ≤ 275 °F the injection volume from one core makeup tank (CMT) (as required by TS 3.5.3) is sufficient to replace the potential reactor coolant volume lost from flashing and evaporation in the event of a worst-case breach of the reactor coolant pressure boundary to continue to maintain the reactor core adequately covered with borated water and provide continued compliance with the required shutdown margin. The NRC staff reviewed DCP_DCP_232126 Appendix A and the analysis provided in DCP_DCP_232127. Furthermore, the NRC staff also reviewed DCP_DCP_232126 Appendix C. The calculations also provided justification for exclusion of requirements related to accumulator injection (TS 3.5.1), in containment refueling water storage tank (IRWST) injection and recirculation (TS 3.5.6), and operability of the automatic depressurization system (ADS) (TS 3.4.11) in Mode 4 when cold leg temperature is ≤ 275 °F. The NRC staff has reviewed the referenced calculations and assumptions including initial and boundary conditions supporting the LAR 23-005 statements.

C. Mode 4 when all Cold Leg Temperatures > 275 °F

In Section 3.2.2 of LAR-23-005, it is determined that operability of two CMTs (TS 3.5.2) and IRWST injection (TS 3.5.6) are required in Mode 4 when all cold leg temperatures > 275 °F to replace the potential reactor coolant volume lost from flashing and evaporation in the event of a breach of the reactor coolant pressure boundary. The NRC staff reviewed DCP_DCP_232126 Appendix A and Appendix C as well as the analysis provided in DCP_DCP_232127. The calculations also provided justification for exclusion of requirements related to accumulator injection (TS 3.5.1) and operability of ADS (TS 3.4.11) in Mode 4 when all cold leg temperatures

are > 275 °F. The NRC staff has reviewed the referenced calculations and assumptions including initial and boundary conditions supporting the LAR 23-005 statements.

VII. CONCLUSIONS

Based on its review of the SNC documentation, the NRC staff concludes that all documents have been reviewed that support VEGP Unit 4 LAR-23-005. The staff has determined that no “requests for additional information” are necessary to complete its safety evaluation.

VIII. SNC AND ASSOCIATED PERSONNEL

SNC

Dan Williamson
Thomas Kindred
Eddie Grant

Westinghouse

Dan Wise
Chris Sommer

IX. DOCUMENTS AUDITED

- DCP_DCP_232126, Appendix A, Quantification of RCS Flashing in Mode 4 vs. Injection Capacity, Revision 0.
- DCP_DCP_232126, Appendix C, Loss of Coolant Accident and Loss of RNS Cooling Assessment, Revision 0.
- DCP_DCP_232126, Appendix D, Containment Integrity LOCA M&E and Negative Containment Pressure Assessment, Revision 0.
- DCP_DCP_232126, Appendix E, Steam Line Break M&E Inside and Outside Containment Assessment, Revision 0.
- DCP_DCP_232127, Loss of RCS Inventory in Mode 4 with no decay heat – Min. RCS liquid volume after flashing vs. Volume to cover core, Revision 0.

X. REFERENCES

1. Southern Nuclear Operating Company, Vogtle Electric Generating Plant Unit 4, License Amendment Request 23-005, “Timing of Unit 4 Technical Specification Effectiveness Prior to Initial Criticality,” dated April 17, 2023 (ML23107A278).
2. VEGP Unit 4, Current Facility Combined License NPF-92, revised April 26, 2023, (ML14100A135).
3. VEGP Units 3 and 4 UFSAR Tier 1, Revision 10, (ML22179A149).
4. VEGP Units 3 and 4 UFSAR Tier 2, Revision 11, (ML22179A160).
5. LIC-111, Revision 1, “Regulatory Audits,” dated October 31, 2019 (ML19226A274).
6. NRC Audit Plan for Regulatory Audit of Vogtle 4 License Amendment Request LAR-23-005, Timing of TS Effectiveness Prior to Initial Criticality, dated May 10, 2023. (Proprietary/Non-Proprietary ADAMS Accession Nos. ML23135A050/ML23137A009).