

**Southern Nuclear Operating Company**

**ND-19-1097**

**Enclosure 4**

**Vogtle Electric Generating Plant (VEGP) Units 3 and 4**

**Response to Request for Additional Information - LAR-19-013R1**

(This Enclosure consists of 5 pages, including this cover page)

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Elimination of License Condition to Evaluate Pressurizer Surge Line Stratification (LAR-19-013R1)

**Southern Nuclear Operating Company (SNC) Response to Request for Additional Information**

On October 2, 2019, the NRC issued a Request for Additional Information (RAI) related to Southern Nuclear Operating Company's (SNC's) License Amendment Request (LAR) 2019-013. The RAI is copied below and SNC's response is provided following each question.

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**ELIMINATION OF LICENSE CONDITION TO EVALUATE PRESSURIZER SURGE LINE STRATIFICATION**  
**SOUTHERN NUCLEAR OPERATING COMPANY, INC.**  
**VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4**  
**DOCKET NOS. 52-025 AND 52-026**

Request for Additional Information (RAI) - 1

General Design Criterion (GDC) 1, "Quality standards and records," in Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50 states that structures, systems, and components (SSCs) important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed.

Bulletin 88-11 states that the licensing basis according to 10 CFR 50.55a for all PWRs requires that the licensee meet the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Sections III and XI and to reconcile the pipe stresses and fatigue evaluation when any significant differences are observed between measured data and the analytical results for the hypothesized conditions.

Question 1

Vogtle Electric Generating Plant (VEGP) Units 3 and 4 LAR-19-013 states the following in Section 2.3, Reason for the Proposed Change:

"First plant data has been collected and will be used to verify the inputs used in the pressurizer surge line design analysis, which will be included as part of the as-built reconciliation of the reactor coolant system ASME Section III Piping System. The as-built reconciliation includes the evaluation of pipe break dynamic loads, changes in support locations, construction deviations, and completion of the small bore piping analysis."

In Section 3, Technical Evaluation, states that:

"... the first AP1000 plant (Sanmen Unit 1) monitored the temperature in the pressurizer surge line using temporary RTDs and displacement sensors, as well as, the three permanent plant RTDs during hot functional testing and the first fuel

cycle. The steady state displacement and temperature measurements of the surge line at different plateaus during hot functional testing heat up and cooldown have met acceptance criteria.”

From the above, it is not clear that the Sanmen Unit 1 surge line as-built reconciliation, including piping configuration and support location changes, has been performed. Please verify that the thermal stratification data collected for temperature distributions and thermal displacements of the Sanmen Unit 1 surge line piping during hot functional testing and during the first fuel cycle have been utilized to validate the surge line piping design analysis, as indicated by the second statement above. If this work, as-built reconciliation and design validation from thermal stratification collected data, has not been performed, discuss when it is scheduled to be completed and how this work will be referenced for VEGP 3 and 4.

### Response to Question 1

The Vogtle 3 and 4 design authority analyzed the data gathered from Sanmen Unit 1 to determine its adequacy to verify the inputs used in the pressurizer surge line design analysis. The analysis provides a summary of how the AP1000 plant maintains compliance with the requests of the NRC Bulletin 88-11 (as described in the current licensing basis). As part of the NRC Bulletin compliance, a description of the data obtained from Sanmen Unit 1 is included with the analysis and demonstrates that additional data from Vogtle Units 3 & 4 is not necessary.

The data recorded at Sanmen 1 will be used to reconcile the Vogtle Units 3 and 4 as-built fatigue and piping stress analyses as a part of the as-built reconciliation of the RCS ASME Section III piping system, as described in UFSAR Section 3.9. The as-built analysis package will be used, in part, to demonstrate completion of Combined License (COL), Appendix C, ITAAC 2.1.02.02a (Index No. 13).

COL Appendix C ITAACs acceptance criteria must be met and the ITAAC completed prior to operation. The pressurizer surge line is identified in ITAAC Table 2.1.2-2 and must meet ASME Code Section III requirements. This ITAAC states, “[t]he piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with the ASME Code Section III requirements.” The changes to remove the temporary monitoring requirements for the pressurizer surge line do not impact the ability of the surge line to meet the ASME Code Section III requirements. Design specifications and design reports for ASME Section III piping are made available for NRC review. Reconciliation of the as-built piping (verification of thermal cycling and stratification loading, as described in UFSAR Section 3.9.8.2) is completed after the construction of the piping systems and prior to fuel load.

Piping functional capability is not a specific ASME Code requirement but it is a requirement in the UFSAR (reference: 3.6.3, 3.6.4.1, Table 3.9-11, Appendix 3b, 5.2.1.). As such, information demonstrating that UFSAR functional capability requirements are met is included in the ASME Section III As-Built Design Reports for safety class piping prepared in accordance with ASME Section III NCA-3550 under the ASME Boiler & Pressure Vessel Code (1998 Edition, 2000 Addenda) Section III requirements. The as-built piping systems are subjected to a reconciliation process, which verifies that the as-built piping systems are analyzed for functional capability and

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for compliance with the design specification and ASME Code provisions. Design reconciliation of the as-built systems validates that construction completion, including field changes and any nonconforming condition dispositions, is consistent with and bounded by the approved design. As required by ASME Code, the As-Built Design Report includes the results of physical inspection of the piping and reconciliation to the design pipe stress report.

### Question 2

Vogtle Electric Generating Plant (VEGP) Units 3 and 4 LAR-19-013 in Section 3.4, First Plant Testing, states the following:

“Reviews were completed of design documents specific to the Sanmen Unit 1 surge line to confirm there were no site-specific deviations that would invalidate the surge line data from being used at Vogtle Units 3 and 4. Similarly, Sanmen Unit 1 heat up and cooldown procedures and transients were reviewed which also confirmed that the changes and transients did not invalidate the surge line data from being used at Vogtle Units 3 and 4.”

The second sentence in the above LAR paragraph indicates that “changes” in the Sanmen Unit 1 heat up and cooldown procedures and transients were reviewed and did not invalidate the surge line data from being used at Vogtle Units 3 and 4. The staff would like to understand what these changes were and how were they reconciled or justified.

### Response 2

The applicability of the pressurizer surge line monitoring data to Vogtle Units 3 and 4 was validated by assessing the systems, structures and components (SSCs) within the scope of the test. The Vogtle Units 3 and 4 surge lines were both designed and procured using the same standard AP1000 design requirements as Sanmen Unit 1. Reviews of site-specific design changes were completed which confirmed Sanmen Unit 1 did not implement changes that would cause the SSCs involved in the testing to be outside of the standard plant design such that the test performance would be impacted. This included a review of site-specific changes to the AP1000 plant heat up and cooldown testing procedures and a review of site-specific changes to the design documents specific to the surge line.

The review of site-specific changes to the heat up and cooldown procedures did not identify any differences between Vogtle Units 3 and 4 and Sanmen Unit 1 that would impact performance of plant heat up or cooldown. A review of Sanmen Unit 1 heat up and cooldown procedures and the Vogtle Unit 3 and 4 heat up and cooldown procedures confirmed that the operational transients (i.e., test plateaus and sequence of tests) remain unchanged. All site-specific changes to the procedures were reviewed to verify no changes were made which would create differences in the procedures such that the test data would be invalidated from being used at Vogtle Units 3 and 4. The types of site-specific changes that were identified, reviewed and dispositioned included implementation of standard nomenclature (for a specific owner), addition of temporary monitoring instrumentation for site-specific requirements, changes to incorporate site-specific Technical Specification format, and minor component changes that do not impact operational parameters. The review concluded the differences between the site-specific procedures does not impact the AP1000 plant temperature data collected during plant operations.

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A review of the pipe supports and the surge line design information for Sanmen Unit 1 and Vogtle Units 3 and 4 did not identify any site-specific changes that impact operation of the surge line. The design of the surge line for Vogtle Units 3 and 4 has not been changed from what was installed at Sanmen Unit 1.

Vogtle Units 3 and 4 have ITAAC requirements associated with the SSCs involved in the pressurizer surge line monitoring requirement. Completion of these ITAAC will verify that Vogtle Units 3 and 4 are within the standard plant AP1000 design as described in the Vogtle Units 3&4 UFSAR. The reviews completed by SNC demonstrated the pressurizer surge line first plant only monitoring completed at Sanmen Unit 1 is applicable to Vogtle Units 3 and 4.