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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant
License Amendment Request to Revise the Minimum Nitrogen Cover Pressure
Specified in Technical Specification Surveillance Requirement 3.5.1.3
and Make an Administrative Change to Technical Specification
Surveillance Requirement 3.6.2.1

Ladies and Gentlemen:

In accordance with the provisions of Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), Southern Nuclear Operating Company (SNC) is submitting a request for an amendment to the Technical Specifications (TS) for the Vogtle Electric Generating Plant (VEGP).

The proposed change would revise the minimum indicated nitrogen cover pressure specified for the accumulators in TS Surveillance Requirement (SR) 3.5.1.3 from 617 psig to 626 psig. The proposed change is necessary to account for the uncertainty associated with the accumulator pressure indication instrumentation. Currently, in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that Are Insufficient to Assure Plant Safety," SNC is administratively controlling the minimum indicated accumulator pressure to greater than or equal to 626 psig.

In addition, the proposed change includes an administrative change to correct an editorial error in the text of TS SR 3.6.2.1.

Enclosure 1 provides the basis for the proposed change to the VEGP TS. Enclosure 2 provides the VEGP TS markup pages showing the proposed changes. Enclosure 3 provides the VEGP TS clean typed pages showing the proposed changes.

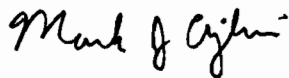
SNC requests approval of the proposed license amendment by July 31, 2012. The proposed changes would be implemented within 60 days of issuance of the amendments.

In accordance with 10 CFR 50.91(b)(1), "State Consultation," a copy of this application and its reasoned analysis about no significant hazards considerations is being provided to the designated Georgia officials.


Mr. M. J. Ajluni states he is Nuclear Licensing Director of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

This letter contains no NRC commitments. If you have any questions, please contact Jack Stringfellow at (205) 992-7037.

Respectfully submitted,



M. J. Ajluni
Nuclear Licensing Director

Sworn to and subscribed before me this 16th day of July, 2011.

Notary Public

My commission expires: 11-2-2013

MJA/DWM/lac

- Enclosures:
1. VEGP Basis for Proposed Change
 2. VEGP Technical Specifications Markup Pages
 3. VEGP Technical Specifications Clean Typed Pages

cc: Southern Nuclear Operating Company
Mr. S. E. Kuczynski, Chairman, President & CEO
Mr. J. T. Gasser, Executive Vice President
Mr. T. E. Tynan, Vice President – Vogtle
Ms. P. M. Marino, Vice President – Engineering
RType: CVC7000

U. S. Nuclear Regulatory Commission
Mr. V.M. McCree, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Farley, Hatch and Vogtle
Mr. P. G. Boyle, NRR Project Manager
Mr. M. Cain, Senior Resident Inspector – Vogtle

State of Georgia
Mr. Allen Barnes, Environmental Director Protection Division

**Vogtle Electric Generating Plant
License Amendment Request to Revise the Minimum Nitrogen Cover
Pressure Specified in Technical Specification Surveillance Requirement
3.5.1.3 and Make an Administrative Change to Technical Specification
Surveillance Requirement 3.6.2.1**

Enclosure 1

Basis for Proposed Change

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1.0 Summary Description

This evaluation supports a request to amend Appendix A of Operating Licenses NPF-68 and NPF-81 for Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2, respectively.

The proposed amendment would revise Technical Specifications (TS) 3.5.1, "Accumulators," to specify a new minimum indicated nitrogen cover pressure for the Safety Injection (SI) accumulators in Surveillance Requirement (SR) 3.5.1.3. The proposed amendment would revise the current minimum indicated nitrogen cover pressure from 617 psig to 626 psig. The proposed amendment is necessary to account for the instrument uncertainty associated with the accumulator pressure indicator instrumentation. Currently SNC is administratively controlling the minimum SI Accumulator pressure to greater than or equal to 626 psig.

In addition, the proposed amendment would correct an editorial error in TS 3.6.2, "Containment Air Locks." The proposed editorial correction would change the word "rage" to "rate" in the text of SR 3.6.2.1.

Southern Nuclear Operating Company (SNC) requests approval of the proposed license amendments by July 31, 2012. The proposed changes would be implemented within 60 days of issuance of the amendments.

2.0 Detailed Description

The proposed change would increase the minimum indicated nitrogen cover pressure in SR 3.5.1.3. The current TS 3.5.1, "Accumulators," SR 3.5.1.3 states:

"Verify nitrogen cover pressure in each accumulator is
 ≥ 617 psig and ≤ 678 psig."

The proposed change would revise SR 3.5.1.3 to state:

"Verify nitrogen cover pressure in each accumulator is
 ≥ 626 psig and ≤ 678 psig."

The proposed change would increase the minimum indicated nitrogen cover pressure value from 617 psig to 626 psig. The values for nitrogen cover pressure specified in SR 3.5.1.3 are indicated values as read on the main control board (MCB) indication.

The instrument uncertainty associated with the accumulator nitrogen cover pressure indication instrumentation (from the transmitter to the MCB indication) was revised. As a result of the revised uncertainty calculation, the uncertainty of the affected instrumentation was increased. Therefore, an increase of the indicated minimum nitrogen pressure value specified in the TS is required.

Only the minimum nitrogen cover pressure is affected by the revised accumulator pressure indication instrumentation uncertainty. The minimum nitrogen cover pressure is assumed in the safety analyses as discussed in Section 3.0 below. The maximum accumulator nitrogen cover pressure is not assumed in the safety analyses and only

serves to prevent accumulator relief valve actuation. The relief valve setpoint is 700 psig. The current SR 3.5.1.3 indicated maximum pressure value of 678 psig has been shown, by operating experience, to be sufficient to prevent accumulator relief valve actuation.

In accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that Are Insufficient to Assure Plant Safety," SNC administratively controls the value of the minimum indicated accumulator nitrogen cover pressure to ≥ 626 psig, rather than the TS specified value of ≥ 617 psig. Thus, assuring that the appropriate instrument uncertainty is applied to the indicated value. Also, in accordance with NRC Administrative Letter 98-10, SNC is submitting this License Amendment Request (LAR) to correct the non-conservative accumulator nitrogen cover pressure value specified in TS 3.5.1, "Accumulators."

The proposed change also includes an editorial correction to SR 3.6.2.1. The current TS 3.6.2, "Containment Air Locks," SR 3.6.2.1 states:

"Perform required air lock leakage rate testing in accordance with the Containment Leakage Rage Testing Program."

The proposed change would revise SR 3.6.2.1 to state:

"Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program."

The proposed change would revise the word "rage" to "rate." The proposed change corrects a typographical error and is administrative in nature. The proposed change has no technical impact on the requirements of TS 3.6.2, "Containment Air Locks."

There are no Bases changes associated with the TS changes described above.

3.0 Technical Evaluation

The SI accumulators are pressure vessels partially filled with borated water and pressurized with nitrogen gas. During normal operation each accumulator is isolated from the Reactor Coolant System (RCS) by two check valves in series. Should the RCS pressure fall below the accumulator pressure, the check valves open and borated water is forced into the RCS. One accumulator is attached to each of the cold legs of the RCS. Mechanical operation of the swing-disc check valves is the only action required to open the injection path from the accumulators to the core via the cold legs.

Connections are provided for remotely adjusting the level and boron concentration of the borated water in each accumulator during normal plant operation as required. The accumulator water level may be adjusted either by draining to the Refueling Water Storage Tank (RWST) or by pumping borated water from the RWST to the accumulator.

The accumulator pressure is maintained by a supply of nitrogen gas and can be adjusted as required during normal plant operation. However, the accumulators are

normally isolated from this nitrogen supply. Gas relief valves on the accumulators protect them from pressures in excess of design pressure.

Accumulator level and pressure are monitored by indicators and alarms. The operator can take action as required to maintain plant operation within the requirements of the TS 3.5.1, "Accumulators."

As discussed in the VEGP Bases for TS 3.5.1, "Accumulators," the requirements of TS 3.5.1 help to ensure that the following criteria established by 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," will be met following a Loss of Coolant Accident (LOCA):

- Maximum fuel element cladding temperature is $\leq 2200^{\circ}\text{F}$;
- Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;
- Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react; and
- Core is maintained in a coolable geometry.

The accumulator size, water volume, and nitrogen cover pressure are selected so that three of the four accumulators are sufficient to partially cover the core before significant clad melting or zirconium water reaction can occur following a LOCA. The purpose of the accumulators is to initiate the post LOCA re-flood process while the ECCS pumps are developing the flow and head necessary to assure long term core cooling. The accumulators are assumed to be operable in both the large and small break LOCA analyses that are performed at full power. These are the Design Basis Accidents (DBAs) that establish the acceptance limits for the accumulators. The large and small break LOCA analyses are performed at the minimum nitrogen cover pressure, since sensitivity analyses have demonstrated that a higher nitrogen cover pressure results in a computed peak clad temperature benefit. The maximum nitrogen cover pressure limit prevents accumulator relief valve actuation.

During an uncertainty calculation reconstitution for the Accumulator Pressure transmitters of interest (Veritrak/Tobar), a temperature compensation (T/C) shift bias of 1.58% was added to reflect the current methodology after discussions with Westinghouse. The revised uncertainty calculation for the accumulator nitrogen pressure indication instrumentation (from the transmitter to the MCB indication) resulted in an uncertainty value of 28.8 psi. The accumulator pressure assumed in the large and small break LOCA analyses is 596.6 psig, with an uncertainty value of 20.4 psi. The current TS value of 617 psig specified for the minimum indicated accumulator pressure is based on the LOCA analyses assumptions (i.e., 596.6 psig + 20.4 psi). Thus, based on the revised accumulator pressure indication instrumentation uncertainty, the TS required minimum indicated value of 617 psig is non-conservative by 8.4 psi (28.8 psi - 20.4 psi) with respect to the assumptions in the large and small break LOCA analyses.

The large and small break LOCAs are the DBAs that establish the acceptance limits for the accumulators. These DBA analyses are performed at the minimum accumulator

nitrogen cover pressure. The proposed change would revise the minimum indicated accumulator nitrogen cover pressure specified in SR 3.5.1.3 to 626 psig (617 psig + 8.4 psi, rounded up to 626 psig). As such, the proposed change would incorporate the revised uncertainty value into the indicated minimum pressure value specified in the TS. Thus, the proposed change is acceptable since it preserves the accumulator pressure assumption in the DBA analyses that establish the acceptance limits for the accumulators.

As previously discussed in Section 2 above, SNC is administratively controlling the TS indicated value for the accumulator nitrogen cover pressure to 626 psig and is submitting this (LAR) to correct TS 3.5.1, "Accumulators," in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that Are Insufficient to Assure Plant Safety."

4.0 Regulatory Evaluation

4.1 Significant Hazards Consideration

The proposed change would revise the minimum indicated nitrogen cover pressure specified for the Safety Injection (SI) accumulators in Surveillance Requirement (SR) 3.5.1.3 from 617 psig to 626 psig. The proposed change is necessary to account for the uncertainty associated with the accumulator pressure indication instrumentation. In addition, the proposed change includes an administrative change to correct an editorial error in the text of TS SR 3.6.2.1.

Southern Nuclear Company (SNC) has evaluated the proposed changes to the Vogtle Electric Generating Plant Technical Specifications (TS) using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below:

As required by 10 CFR 50.91(a), the SNC analysis of the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is presented below:

- 1: Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed amendment revises the minimum indicated nitrogen cover pressure specified for the SI accumulators in SR 3.5.1.3 from 617 psig to 626 psig. In addition, the proposed change includes an administrative change to correct an editorial error in the text of TS SR 3.6.2.1.

The SI accumulators are not a precursor to any accident previously evaluated. The SI accumulators are used to mitigate the consequences of accidents previously evaluated. The proposed change to the indicated minimum SI accumulator nitrogen cover pressure provides assurance that the requirements of the TS continue to bound the acceptance limits of the SI accumulators with respect to the assumptions in the LOCA analyses.

Thus, the proposed change does not affect the probability or the consequences of any accident previously evaluated. The proposed change to correct an editorial error in the text of SR 3.6.2.1 has no impact on the probability or consequences of any accident previously evaluated.

Therefore, it is concluded that the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

- 2: Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change revises the minimum indicated nitrogen cover pressure specified for the SI accumulators in SR 3.5.1.3 from 617 psig to 626 psig. In addition, the proposed change includes an administrative change to correct an editorial error in the text of TS SR 3.6.2.1.

The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The proposed change to the requirements of the TS assure that the acceptance limits of the SI accumulators with respect to the assumptions in the LOCA analyses continue to be met, and correct an editorial error in the text of an SR. Thus, the proposed change does not adversely affect the design function or operation of any structures, systems, and components important to safety.

Therefore, it is concluded that the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

- 3: Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change revises the minimum indicated nitrogen cover pressure specified for the SI accumulators in SR 3.5.1.3 from 617 psig to 626 psig. In addition, the proposed change includes an administrative change to correct an editorial error in the text of TS SR 3.6.2.1.

The proposed change to the indicated SI accumulator nitrogen cover pressure provides assurance that the requirements of the TS continue to bound the acceptance limits of the SI accumulators with respect to the assumptions in the LOCA analyses. Thus the proposed change to the SI accumulator minimum nitrogen cover pressure assures the existing margin of safety is maintained. The proposed change to correct an editorial error in the text of SR 3.6.2.1 has no impact on the margin of safety.

Therefore, it is concluded that the proposed change does not involve a significant reduction in a margin of safety.

Based upon the above analysis, SNC concludes that the proposed amendment does not involve a significant hazards consideration, under the standards set forth in 10 CFR 50.92(c), "Issuance of Amendment," and accordingly, a finding of "no significant hazards consideration" is justified.

4.2 Applicable Regulatory Requirements/Criteria

The requirements of TS 3.5.1, "Accumulators," ensure that the following criteria established by 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors," will be met following a Loss of Coolant Accident (LOCA):

- Maximum fuel element cladding temperature is $\leq 2200^{\circ}\text{F}$;
- Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;
- Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react; and
- Core is maintained in a coolable geometry.

The SI accumulator size, water volume, and nitrogen cover pressure are selected so that three of the four accumulators are sufficient to partially cover the core before significant clad melting or zirconium water reaction can occur following a LOCA. The purpose of the accumulators is to initiate the post LOCA re-flood process while the ECCS pumps are developing the flow and head necessary to assure long term core cooling. The accumulators are assumed to be operable in both the large and small break LOCA analyses performed at full power. These are the Design Basis Accidents (DBAs) that establish the acceptance limits for the accumulators. The large and small break LOCA analyses are performed at the minimum nitrogen cover pressure, since sensitivity analyses have demonstrated that a higher nitrogen cover pressure results in a computed peak clad temperature benefit. The maximum nitrogen cover pressure limit prevents accumulator relief valve actuation.

The proposed change would revise the minimum indicated accumulator nitrogen cover pressure specified in SR 3.5.1.3 from 617 psig to 626 psig which incorporates an uncertainty value that assures the TS requirements bound the minimum nitrogen cover pressure assumed in the large and small break LOCA analyses. Thus, the proposed change is acceptable since it preserves the accumulator pressure assumption in the DBA analyses that establish the acceptance limits for the accumulators.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 Environmental Consideration

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 References

1. NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety," December 29, 1998.
2. 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors."

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Enclosure 2

Technical Specification Markup Pages

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	12 hours
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 6555 gallons and ≤ 6909 gallons.	12 hours
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 647 psig and ≤ 678 psig.	12 hours
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 1900 ppm and ≤ 2600 ppm.	31 days <u>AND</u> For each affected accumulator, once within 6 hours after each solution volume increase of ≥ 67 gallons, that is not the result of addition from the refueling water storage tank
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is > 1000 psig.	31 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.6.2.1</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p>	<p>Rate</p> <p>In accordance with the Containment Leakage Rate Testing Program</p>
<p>SR 3.6.2.2</p> <p>Verify only one door in the air lock can be opened at a time.</p>	<p>18 months</p>

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Surveillance Requirement 3.6.2.1**

Enclosure 3

Technical Specification Clean Typed Pages

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.1.1	Verify each accumulator isolation valve is fully open.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.2	Verify borated water volume in each accumulator is ≥ 6555 gallons and ≤ 6909 gallons.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.3	Verify nitrogen cover pressure in each accumulator is ≥ 626 psig and ≤ 678 psig.	In accordance with the Surveillance Frequency Control Program
SR 3.5.1.4	Verify boron concentration in each accumulator is ≥ 1900 ppm and ≤ 2600 ppm.	<p>In accordance with the Surveillance Frequency Control Program</p> <p><u>AND</u></p> <p>For each affected accumulator, once within 6 hours after each solution volume increase of ≥ 67 gallons, that is not the result of addition from the refueling water storage tank</p>
SR 3.5.1.5	Verify power is removed from each accumulator isolation valve operator when pressurizer pressure is > 1000 psig.	In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.2.1	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. <p>-----</p> <p>Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.</p>	In accordance with the Containment Leakage Rate Testing Program
SR 3.6.2.2	Verify only one door in the air lock can be opened at a time.	In accordance with the Surveillance Frequency Control Program