



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

October 31, 2016

Mr. Charles R. Pierce
Regulatory Affairs Director
Southern Nuclear Operating Company, Inc.
P.O. Box 1295, Bin 038
Birmingham, AL 35201-1295

**SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 2 – ISSUANCE OF
AMENDMENT FOR 2B NUCLEAR SERVICE COOLING WATER TRANSFER
PUMP (CAC NO. MF8274)**

Dear Mr. Pierce:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 164 to Renewed Facility Operating License No. NPF-81 for the Vogtle Electric Generating Plant, Unit 2, in response to your application dated August 12, 2016, as supplemented by letter dated September 15, 2016.

The amendment modifies the Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.7.9, "Ultimate Heat Sink (UHS)," to add a Note to extend the completion time of Condition D.2.2 of LCO 3.7.9 from 31 to 46 days to allow for refurbishing the 2B nuclear service cooling water (NSCW) transfer pump. This TS change would be a one-time change only for the 2B NSCW transfer pump during operating Cycle 19.

A copy of the related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

C. Pierce

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If you have any questions, regarding this matter, I may be reached at (301) 415-1493 or Robert.Martin@nrc.gov.

Sincerely,

A handwritten signature in black ink that reads "Bob Martin". The signature is written in a cursive, slightly slanted style.

Bob Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-425

Enclosure:

1. Amendment No. 164 to NPF-81
2. Safety Evaluation

cc w/enclosures: Distribution via Listserv



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-425

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 164
Renewed License No. NPF-81

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility), Renewed Facility Operating License No. NPF-81, filed by Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company Oglethorpe Power Corporation; Municipal Electric Authority of Georgia; and City of Dalton, Georgia (the owners), dated August 12, 2016, as supplemented by letter dated September 15, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

Enclosure 1

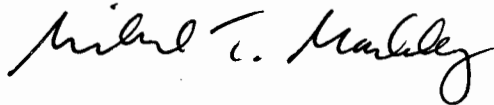
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications (TSS) as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-81 is hereby amended to read as follows:

C. Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 164 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed NPF-81
and Technical Specifications

Date of Issuance: October 31, 2016

ATTACHMENT

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

LICENSE AMENDMENT NO. 164

RENEWED FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following page of the Renewed Facility Operating License and the Appendix A Technical Specifications (TSs) with the attached revised page. The revised pages are identified by amendment number and a marginal line indicating the area of change.

Remove Page

License

3

TSs

3.7.9-2

Insert Page

License

3

TSs

3.7.9-2

- (2) Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, pursuant to the Act and 10 CFR Part 50, to possess but not operate the facility at the designated location in Burke County, Georgia, in accordance with the procedures and limitations set forth in this license;
- (3) Southern Nuclear, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
- (4) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;
- (6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter 1 and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

Southern Nuclear is authorized to operate the facility at reactor core power levels not in excess of 3625.6 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 164 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

The Surveillance requirements (SRs) contained in the Appendix A Technical Specifications and listed below are not required to be performed immediately upon implementation of Amendment No. 74. The SRs listed below shall be

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One NSCW basin transfer pump inoperable.	D.1 Restore the transfer pump to OPERABLE status.	8 days
	<u>OR</u>	
	D.2.1 Implement an alternate method of basin transfer.	8 days
	<u>AND</u>	
	D.2.2 Restore the transfer pump to OPERABLE status.	<p>-----NOTE----- A one-time only change of the Completion Time to 46 days is permitted for the 2B NSCW transfer pump refurbishment during Vogtle Unit 2, Cycle 19. The increased Completion Time is applicable only to the 2B NSCW transfer pump. -----</p> <p>31 days</p>
E. Required Action and associated Completion Time not met.	E.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	E.2	<p>-----NOTE----- LCO 3.0.4.a is not applicable when entering MODE 4. -----</p> <p>Be in MODE 4.</p> <p>12 hours</p>
<u>OR</u>		
UHS inoperable for reasons other than Conditions A, B, C, or D.		



UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 164 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

1.0 INTRODUCTION

By letter dated August 12, 2016, as supplemented by letter dated September 15, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML16225A619 and ML16259A371, respectively), Southern Nuclear Operating Company, Inc. (SNC, the licensee) submitted a license amendment request (LAR) to revise the Vogtle Electric Generating Plant (VEGP), Unit 2, Technical Specifications (TSs). The amendment modifies the Unit 2 Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.7.9, "Ultimate Heat Sink (UHS)," to add a Note to extend the completion time of Condition D.2.2 of LCO 3.7.9 from 31 to 46 days to allow for refurbishing the 2B nuclear service cooling water (NSCW) transfer pump. This TS change would be a one-time change only for the 2B NSCW transfer pump during operating Cycle 19.

The supplemental letter dated September 15, 2016, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC, the Commission) staff's proposed no significant hazards consideration determination as published in the *Federal Register* on August 30, 2016 (81 FR 59666).

2.0 REGULATORY EVALUATION

2.1 System Description

Sections 9.2.1 and 9.2.5 of the VEGP Final Safety Analysis Report (FSAR) provide a description of the VEGP NSCW system and the VEGP UHS, respectively. The UHS for each VEGP unit consists of two NSCW towers, with one tower associated with each train of the NSCW system. Each NSCW tower includes a large water basin, three NSCW pumps (two 50 percent capacity and one standby), one NSCW transfer pump (for the opposite train), and a mechanical-draft cooling tower structure with four fan cells. The two normally operating NSCW pumps in each train provide water from the basin to remove heat from equipment supporting normal operation, reactor cooldown, and accident mitigation. The NSCW system flow returns to

the basin via the mechanical draft cooling tower, which transfers heat to the atmosphere. Each tower provides 100 percent of the required heat removal capacity.

The VEGP UHS is operable when (1) the basin level and water temperature are within limits, (2) the required number of fans for the atmospheric conditions and basin water temperature are operable, and (3) the NSCW transfer pumps are operable. Section 1.9.27 of the VEGP FSAR states that VEGP conforms with Regulatory Guide (RG) 1.27, Revision 2, "Ultimate Heat Sink for Nuclear Power Plants," January 1976 (ADAMS Accession No. ML003739969), which specifies sufficient water inventory to support design-basis, post-accident, and safe-shutdown heat removal requirements for 30 days without makeup. The combined inventory of both basins is necessary to provide this capability. The 30-day performance reflects operation of both NSCW trains for one day, operation of one NSCW train for the following 29 days, and transfer of water from the nonoperating tower basin to the operating tower basin, as necessary, to maintain adequate cooling water inventory.

2.2 Amendment Request Scope

The licensee requested a change to TS 3.7.9. The TS 3.7.9 limiting condition for operation (LCO) requires the UHS to be operable in operating Modes 1, 2, 3, and 4. The proposed change would add a note modifying the completion time for TS 3.7.9 Condition D, which applies when the UHS is inoperable because one NSCW basin transfer pump is inoperable. The required actions and completion times for this condition are to either restore the transfer pump to operable status within 8 days (Required Action D.1) or implement an alternative method of basin transfer within 8 days (Required Action D.2.1), and restore the transfer pump to operable status within 31 days (Required Action D.2.2). The licensee proposed adding the following Note above the 31-day completion time of Required Action D.2.2:

A one-time only change of the Completion Time to 46 days is permitted for the 2B NSCW transfer pump refurbishment during Vogtle Unit 2, Cycle 19. The increased Completion Time is applicable only to the 2B NSCW transfer pump.

The licensee stated that the purpose of the above-requested change is to allow for refurbishment of the 2B NSCW transfer pump while Unit 2 is operating at power. The need for refurbishment of the 2B NSCW transfer pump was identified through degrading performance during quarterly inservice testing of the pump, which is otherwise normally in standby.

The NSCW transfer pumps are a deep vertical column design over 80 feet in length, and each pump column is held in place by seven pairs of seismic restraint pins spaced along the column. The licensee stated that the mating loops for the restraint pins were welded in position with the pump in place, establishing a custom fit for the column restraints, which makes removal and replacement of the pump challenging. The licensee has identified measures to minimize the duration of the refurbishment, such as preordering materials and beginning installation of lower sections of the pump, while the upper sections are still being worked. Nevertheless, the planned refurbishment is expected to require the entire 31-day completion time permitted by TS 3.7.9 when an alternate method of basin transfer has been established. The licensee requested the additional 15 days permitted by the note during this one-time refurbishment to cover uncertainties in the refurbishment schedule.

2.3 Regulatory Criteria

The proposed license amendment involves a change to the content of the TSs. The NRC staff reviewed the proposed TS changes for compliance with applicable regulations and conformance with associated regulatory guidance.

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36, "Technical specifications," requires that each operating license issued by the Commission contain TSs that include limiting conditions for operation, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

Guidance for staff review of TSs is contained in Section 16.0, "Technical Specifications," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" (ADAMS Accession No. ML070810350). The NRC staff prepared Standard Technical Specifications (STS) for each of the light-water reactor nuclear steam supply systems and associated balance-of-plant equipment systems. The guidance specifies that the staff review whether content and format are consistent with the applicable STS. Where TS provisions depart from the reference TSs, the staff determines whether proposed differences are justified by uniqueness in plant design or other considerations.

The applicable STS for VEGP are contained in NUREG-1431, Revision 4, "Standard Technical Specifications - Westinghouse Plants" (ADAMS Accession Nos. ML12100A222 and ML12100A228). Due to the unique design of the VEGP UHS, the STS do not address the aspects of the UHS configuration relevant to the proposed change.

Regulatory Position C.1 of RG 1.27, Revision 2, states the following with respect to cooling capacities of less than 30 days:

A cooling capacity of less than 30 days may be acceptable if it can be demonstrated that replenishment or use of an alternate water supply can be effected to assure the continuous capability of the sink to perform its safety functions, taking into account the availability of replenishment equipment and limitations that may be imposed on "freedom of movement" following an accident or the occurrence of severe natural phenomena.

3.0 TECHNICAL EVALUATION

The proposed change to VEGP TS 3.79 Required Action D.2.2 adds a Note extending the existing completion time to restore an inoperable NSCW transfer pump to operable status when an alternative method of basin inventory transfer is available from 31 days to 46 days. The use of an alternative method of basin inventory transfer is explicitly included in the existing TS as a basis to extend the completion time to restore an inoperable NSCW pump to service from 8 days to 31 days. The proposed change adds an additional 15 days to extend the completion time to 46 days only during refurbishment of the 2B NSCW transfer pump during Unit 2 Cycle 19. Since the change is effectively an increase in the time the facility relies on the alternative method of basin inventory transfer, the staff concluded acceptance should be based

on reliability, commensurate with the duration of the refurbishment and potential challenges to the operation of the alternative method.

In response to an NRC request for additional information provided by the letter dated September 15, 2016, the licensee described the alternative method of basin inventory transfer. The alternative method consists of connecting a 6-inch diameter hose between the 2A NSCW cross pumping flange in the 2A NSCW tower and the basin in the 2B NSCW tower. To improve readiness, the licensee stated that the fire hose would be connected to the 6-inch cross pumping flange within the 2A NSCW tower using an adapter. In the case of an event requiring water transfer from the 2A NSCW tower to the 2B NSCW tower, doors would be propped open in the two towers, and the hose would be routed the approximately 330 feet to the 2B tower basin. Flow from the 2A NSCW pumps could be directed to the cross pumping flange (non-safety, non-seismic) connection by operation of a single valve. Both the NSCW pumps and the valve are safety-related and seismically qualified.

The 2B NSCW transfer pump that will be undergoing refurbishment is located in the 2A NSCW tower but receives power from the B Train. Its use would be important if the B Train was providing post-accident heat removal. The proposed alternative method of basin inventory transfer would rely on the 2A NSCW pumps, which receive power from the A Train, and would not necessarily be available when the 2B NSCW tower is performing the UHS function. However, the transfer function would not be necessary for several days post-accident, and the likelihood that only the B Train would be available at that time is very low. Furthermore, the licensee described the following measures that would enhance the reliability of the proposed alternative method of transfer:

- A temporary configuration change will cover maintenance personnel implementation of the alternative inventory transfer in the field and give operators clear guidance in the event the transfer system is called upon to perform its function.
- By procedure, A-Train power would be protected for the duration of the extension and work would be limited to ensure the reliability of A-Train power.
- NSCW transfer would only be needed following a design-basis event when the emergency response organization would be available to complete any necessary repairs expeditiously.

Based on the above, the staff concludes that the proposed alternative method of basin inventory transfer is suitably reliable to support the extension of the completion time to 46 days for Required Action D.2.2 and is consistent with the requirements of 10 CFR 50.36.

In addition, the licensee identified supplemental equipment that could be used to perform the inventory transfer function in the event the proposed alternative method was not available. This equipment included a hydraulically-driven submersible pump and a diesel-hydraulic power skid, which, combined with appropriate hoses and fittings, would be able to pump water from one NSCW basin to another. The NRC staff concludes that this additional capability enhances defense-in-depth and adds to the reliability of the transfer function.

Summary

The NRC staff found the proposed change to TS 3.7.9 Required Action D.2.2 acceptable and consistent with the requirements of 10 CFR 50.36. The provision of an alternative method for basin inventory transfer has been explicitly identified in the existing required actions as an acceptable basis to extend the completion time to restore an inoperable NSCW transfer pump to operable status. The licensee proposed a specific, reliable, alternative method for NSCW basin inventory transfer; identified reasonable administrative controls to ensure the availability of the alternative method; and identified additional equipment capable of performing the inventory transfer function. The NRC staff concludes that the proposed increase in the completion time for TS 3.7.9 Required Action D.2.2 is acceptable because the reliability of identified alternative methods is adequate to support the increased time.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (81 FR 59666). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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.

Principal Contributor: Steve Jones

Date: October 31, 2016

C. Pierce

- 2 -

If you have any questions, regarding this matter, I may be reached at (301) 415-1493 or Robert.Martin@nrc.gov.

Sincerely,

/RA/

Bob Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-425

Enclosure:

1. Amendment No. 164 to NPF-81
2. Safety Evaluation

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