

December 2, 2005

Mr. D. E. Grissette  
Vice President  
Southern Nuclear Operating  
Company, Inc.  
P.O. Box 1295  
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2, ISSUANCE OF  
AMENDMENTS REGARDING ULTIMATE HEAT SINK (TAC NOS. MC2762  
AND MC2763)

Dear Mr. Grissette:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 140 to Facility Operating License NPF-68 and Amendment No. 119 to Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated April 26, 2004, as supplemented on April 18 and July 22, 2005.

The amendments revise the TSs, for operation of the ultimate heat sink nuclear service cooling water system.

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.

Sincerely,

***/RA by RMartin for/***

Christopher Gratton, Sr. Project Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 140 to NPF-68
2. Amendment No. 119 to NPF-81
3. Safety Evaluation

cc w/encls: See next page

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The amendments revise the TSs, for operation of the ultimate heat sink nuclear service cooling water system.

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.

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**/RA by RMartin for/**  
Christopher Gratton, Senior Manager  
Plant Licensing Branch II-1  
Division of Operating Reactor Licensing  
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SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 140  
License No. NPF-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility) Facility Operating License No. NPF-68 filed by the 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 April 26, 2004, as supplemented on April 18 and July 22, 2005, 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.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-68 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 140, 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA by LOIshan for/*

Evangelos C. Marinos, Chief  
Plant Licensing Branch C  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: December 2, 2005

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 119  
License No. NPF-81

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the 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 April 26, 2004, as supplemented on April 18 and July 22, 2005, 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.

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

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 119, 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA by LOIshan for/*

Evangelos C. Marinos, Chief  
Plant Licensing Branch C  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: December 2, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 140

FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

AND

TO LICENSE AMENDMENT NO. 119

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3.7.9-1  
3.7.9.3  
B 3.7.9-2  
B 3.7.9-4  
B 3.7.9-5

Insert

3.7.9-1  
3.7.9.3  
B 3.7.9-2  
B 3.7.9-4  
B 3.7.9-5

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 140 TO FACILITY OPERATING LICENSE NPF-68  
AND AMENDMENT NO. 119 TO FACILITY OPERATING LICENSE NPF-81  
SOUTHERN NUCLEAR OPERATING COMPANY, INC.  
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-424 AND 50-425

## 1.0 INTRODUCTION

By letter dated April 26, 2004, as supplemented on April 18 and July 22, 2005, Southern Nuclear Operating Company, Inc. (the licensee), proposed license amendments to change the Technical Specifications (TSs) for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The proposed changes would revise TS Limiting Conditions for Operation (LCO) 3.7.9, "Ultimate Heat Sink (UHS)." The proposed changes are as follows:

- Revise the LCO statement to require four fans and four spray cells per train to be operable when ambient wet-bulb temperature (AWBT) is > 63 EF. With AWBT # 63 EF, only three fans and four spray cells are required to be operable;
- Revise Condition B to "One NSCW [nuclear service cooling water] cooling tower with one or more required fans and/or spray cells inoperable";
- Add Surveillance Requirement (SR) 3.7.9.5 to verify AWBT when one NSCW tower fan is out-of-service;
- Revise Required Action B.1 to "Restore required fan(s) and spray cells to OPERABLE status"; and
- Revise SR 3.7.9.3 to state "Operate each required NSCW cooling tower fan for \$ 15 minutes."

The licensee also provided changes to the Bases associated with the above changes. The supplemental letters dated, April 18 and July 22, 2005, provided clarifying information that did not change the scope of the April 26, 2004, application and the initial proposed no significant hazards consideration determination.

## 2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission's (NRC's) Standard Review Plan (SRP) 9.2.5 applies to the UHS. The acceptability of the design of the UHS is based on specific general design criteria (GDC) in Appendix A of 10 CFR Part 50 and regulatory guides. GDC 2, 5, 44, 45, and

46 provide the criteria for an acceptable UHS design, only the criteria of GDC 44 and 45 apply to the proposed changes. Therefore, the NRC staff evaluated changes proposed by this license amendment request based on the applicable criteria for GDC 44 which specifies: (a) The capability to transfer heat loads from safety-related structures, systems, and components to the heat sink under both normal operating and accident conditions, (b) Suitable component redundancy so that safety functions can be performed assuming a single active component failure coincident with loss of offsite power, and (c) The capability to isolate components, systems, or piping if required so that safety functions are not compromised; and GDC 46, which specifies that the design of the cooling water system permit functional testing of safety-related systems or components.

### 3.0 TECHNICAL EVALUATION

At VEGP, the UHS consists of a NSCW system of mechanical draft towers. Two 100 percent capacity redundant NSCW towers are provided for each unit. One tower is associated with each train of the NSCW System. Each NSCW tower consists of a basin that contains the UHS water supply and an upper structure that contains four individual fan spray cells where the heat loads are transferred to the atmosphere. Each spray cell contains one safety-related temperature controlled fan. Instrumentation is provided for monitoring basin level and water temperature. The tower basins each contain a safety-related transfer pump to permit the use of the combined storage capacity of the basins. The combined storage capacity of two tower basins provides greater than a 30-day cooling water supply, assuming the worst combination of meteorological conditions and accident heat loads which maximize the tower heat load, basin temperature, and evaporative losses.

The current TS LCO 3.7.9, "Ultimate Heat Sink (UHS)," requires that the UHS be operable as shown below.

LCO 3.7.9 The UHS shall be OPERABLE.

The Bases for LCO 3.7.9 defines an operable UHS as containing a sufficient volume of water at or below the maximum temperature that would allow the NSCW system to operate for at least 30 days following a design-basis LOCA without the loss of net positive suction head, and without exceeding the maximum design temperature of the equipment served by the NSCW system. Specifically, the current Bases state, in part, that "two NSCW tower basins are required OPERABLE with the following: (3.) Two OPERABLE trains of NSCW tower fans, each train consisting of four fans and spray cells."

LCO 3.7.9 is proposed to be revised, based on AWBT as follows:

LCO 3.7.9 The UHS shall be OPERABLE. With ambient wet-bulb temperature > 63 EF, four fans and four spray cells per train shall be OPERABLE. With ambient wet bulb temperature # 63 EF, three fans and four spray cells per train shall be OPERABLE.

The proposed change will allow operation of the VEGP with three fans operable under specified atmospheric conditions. The licensee stated that each cooling tower, with four fans operating, is designed to reject a heat load of 265 million British Thermal Units (BTUs) per hour at a flow

rate of 15,600 gpm and an AWBT of 82 °F. These are the design conditions for plant cool-down with a loss of offsite power (LOOP), and a main steamline break, or a loss-of-coolant accident. Based on the cooling tower performance data, the licensee determined that three fans could remove this accident heat load provided the AWBT does not exceed 67 °F.

Existing system calculations also evaluate a postulated accident during which a single train of NSCW with three tower fans in operation maintains the tower cold water temperature at acceptable temperature limits assuming a LOOP and one fan lost from service due to a tornado. For this event, given these conditions, the maximum heat load would be 235 million BTUs per hour. Based on the cooling tower performance data, the licensee determined that the two remaining fans would be capable of removing this heat load provided that the AWBT does not exceed 63 °F. Because the AWBT of 63 °F is more limiting than the AWBT for the LOCA/MSLB case (67 °F), the licensee proposed to use this temperature as the limiting value in the revised TS.

After reviewing the Marley performance curves the NRC staff concluded that an AWBT of 63 °F or lower was sufficient to reject the design heat load of 235 million BTU per hour at a flow rate of 15,600 gpm when two fans per train are operating.

LCO Condition B and Required Action B.1 are modified to require action to restore fans and spray cells to operable when one NSCW tower with one or more required fans and/or spray cells is inoperable. This is more restrictive than the previous Condition B to the LCO which permitted both cooling towers to have one or more fans and /or spray cells inoperable. The NRC staff finds the proposed changes to Condition B and Required Action B.1 and SR 3.7.9.3 acceptable.

The licensee proposed to add SR 3.7.9.5, to be performed at a frequency of 24 hours, as follows:

Verify ambient wet-bulb temperature #63 °F when one NSCW tower fan is out-of-service and daily high temperature (dry-bulb) is forecasted to be > 48 °F.

The 48 °F dry-bulb temperature ensures that a fifteen-degree margin exists between the forecasted daily high temperature and the TS limit of 63 °F (wet-bulb). This limit eliminates the need for surveillance of the wet-bulb temperature when daily temperatures (dry-bulb) are not expected to reach 48 °F. Surveillance of the ambient temperature is necessary to ensure that 63°F (wet-bulb) is not exceeded. When the ambient temperature (dry-bulb) is greater than 48 °F, and one NSCW tower fan is out of service, daily surveillance of the wet-bulb temperature will be required to ensure that the TS limit of 63 °F is not exceeded.

The licensee reviewed 19 months of recent National Weather Service (NWS) data for reasonable assurance that the daily forecast high temperature was accurate to within fifteen degrees of the actual daily high temperature. NWS operates a national weather forecast verification program that provides feedback to forecasters. This publicly available data provides trends in forecast accuracy. The southeastern United States forecast accuracy was typically within fifteen degrees of the actual daily high temperatures when predicted dry-bulb temperature was 48 °F. The NRC staff concluded that a fifteen-degree dry-bulb temperature

margin would provide reasonable assurance that when a 24-hour NWS temperature forecast is below 48 °F, the actual AWBT should not exceed 63 °F.

Therefore, the NRC staff concludes that the UHS will continue to meet the requirements of GDC 44, and 46. The NRC staff also finds that the UHS, with the proposed changes, will continue to meet the applicable acceptance criteria of SRP Section 9.2.5. On these bases, as discussed above, the NRC staff finds the proposed changes acceptable.

#### 4.0 STATE CONSULTATION

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

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (69 FR 43462). Accordingly, the amendments meet 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 amendments.

#### 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: H. Wagage  
J. Tatum

Date: December 2, 2005

Vogtle Electric Generating Plant, Units 1 & 2

cc:

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