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

June 2, 2015

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

SUBJECT: JOSEPH M. FARLEY, UNITS 1 AND 2, AND VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2, ISSUANCE OF AMENDMENTS (TAC NOS. MF4828, MF4829, MF4889, AND MF4890)

Dear Mr. Pierce:

The U.S Nuclear Regulatory Commission has issued the enclosed Amendment No.198 to Joseph M. Farley Nuclear Plant (Farley) Unit 1, Renewed Facility Operating License No. NPF-2, Amendment No.194 to Farley, Unit 2, Renewed Facility Operating License No. NPF-8, Amendment No. 174 to Vogtle Electric Generating Plant (VEGP), Unit 1, Renewed Facility Operating License NPF-68, and Amendment No. 156 to VEGP, Unit 2, Renewed Facility Operating License NPF-81. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 17, 2014, as supplemented by letter dated February 13, 2015.

The amendments revise the Vogtle and Farley Units 1 and 2 TS Surveillance Requirement (SR) 3.1.3.2 and TS 5.6.5 to allow the normally-required near-End-Of-Cycle (EOC) Moderator Temperature Coefficient (MTC) measurement to not be performed under certain conditions. If these conditions are met, the MTC measurement would be replaced by a calculated value, which would be compared to the cycle-specific EOC MTC limit specified in each unit's Core Operating Limits Report.

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

Sincerely,

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348, 50-364, 50-424, 50-425

Enclosures:
1. Amendment No. 198 to NPF-2
2. Amendment No. 194 to NPF-8
3. Amendment No. 174 to NPF-68
4. Amendment No. 156 to NPF-81
5. Safety Evaluation

cc w/encls: Distribution via Listserv

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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 198
Renewed License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Joseph M. Farley Nuclear Plant, Unit 1, Renewed Facility Operating License No. NPF-2, filed by Southern Nuclear Operating Company, Inc. (the licensee), dated September 17, 2014, as supplemented by letter dated February 13, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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;

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

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 198, are hereby incorporated in the renewed facility operating license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

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

Robert J. Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-2
And the Technical Specifications

Date of Issuance: June 2, 2015

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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 194
Renewed License No. NPF-8

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Joseph M. Farley Nuclear Plant, Unit 2, Renewed Facility Operating License No. NPF-8, filed by Southern Nuclear Operating Company, Inc. (the licensee), dated September 17, 2014, as supplemented by letter dated February 13, 2015, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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;

   D. The issuance of this license 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 2

2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-8 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 194, are hereby incorporated in the renewed facility operating license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

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

Robert J. Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-8
And the Technical Specifications

Date of Issuance: June 2, 2015

**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. 50-424

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 174
Renewed License No. NPF-68

1. The U. S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility) Renewed 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 September 17, 2014, as supplemented by letter dated February 13, 2015, 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 Renewed Facility Operating License No. NPF-68 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. 174, 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 from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: June 2, 2015

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. 156
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 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 September 17, 2014, as supplemented by letter dated February 13, 2015, 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 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. 156, 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 from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert Pascarelli, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: June 2, 2015

JOSEPH M. FARLEY

ATTACHMENT TO

LICENSE AMENDMENT NO. 198

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

AND LICENSE AMENDMENT NO. 194

TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

DOCKET NO. 50-364

Replace the following pages of the Renewed Facility Operating License and Appendix "A" Technical Specifications (TSs) with the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

| Remove | Insert |
|---|---|
| License | License |
| NPF-2, page 4 | NPF-2, page 4 |
| NPF-8, page 3 | NPF-8, page 3 |
| TSs | TSs |
| 3.1.3-2 | 3.1.3-2 |
| 5.6-4 | 5.6-4 |
| 5.6-5 | 5.6-5 |
| 5.6-6 | 5.6-6 |

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 198, are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

The matters specified in the following conditions shall be completed to the satisfaction of the Commission within the stated time periods following the issuance of the renewed license or within the operational restrictions indicated. The removal of these conditions shall be made by an amendment to the renewed license supported by a favorable evaluation by the Commission.

a. Southern Nuclear shall not operate the reactor in Operational Modes 1 and 2 with less than three reactor coolant pumps in operation.

b. Deleted per Amendment 13

c. Deleted per Amendment 2

d. Deleted per Amendment 2

e. Deleted per Amendment 152

Deleted per Amendment 2

f. Deleted per Amendment 158

g. Southern Nuclear shall maintain a secondary water chemistry monitoring program to inhibit steam generator tube degradation. This program shall include:

1) Identification of a sampling schedule for the critical parameters and control points for these parameters;

2) Identification of the procedures used to quantify parameters that are critical to control points;

3) Identification of process sampling points;

4) A procedure for the recording and management of data;

5) Procedures defining corrective actions for off control point chemistry conditions; and

(2) Alabama Power Company, pursuant to Section 103 of the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to possess but not operate the facility at the designated location in Houston County, Alabama in accordance with the procedures and limitations set forth in this renewed 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; and

(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.

C. This renewed license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I 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 2775 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 194 are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

(3) Deleted per Amendment 144

(4) Deleted per Amendment 149

(5) Deleted per Amendment 144

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.1.3.1 | Verify MTC is within BOL limit. | Once prior to entering MODE 1 after each refueling |
| SR 3.1.3.2 | ----------NOTES----------<br>1. Not required to be performed until 7 effective full power days (EFPD) after reaching the equivalent of an equilibrium RTP all rods out (ARO) boron concentration of 300 ppm.<br>2. SR 3.1.3.2 is not required to be performed by measurement provided that the benchmark criteria in WCAP-13749-P-A are satisfied and the Revised Predicted MTC satisfies the 300 ppm surveillance limit specified in the COLR.<br>3. If the MTC is more negative than the 300 ppm Surveillance limit (not LCO limit) specified in the COLR, SR 3.1.3.2 shall be repeated once per 14 EFPD during the remainder of the fuel cycle.<br>4. SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of ≤ 100 ppm is less negative than the 100 ppm Surveillance limit specified in the COLR.<br>----------<br>Verify MTC is within EOL limit. | Once each cycle |

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

3a. WCAP-12945-P-A, Volume 1, Revision 2, and Volumes 2 through 5, Revision 1, "Code Qualification Document for Best Estimate LOCA Analysis," March 1998 (W Proprietary).

3b. WCAP-12610-P-A, "Vantage+ Fuel Assembly Reference Core Report," April 1995 (W Proprietary).

(Methodology for LCO 3.2.1 - Heat Flux Hot Channel Factor and LCO 3.4.1-RCS Pressure, Temperature and Flow Departure from Nucleate Boiling Limits.)

3c. WCAP-16009-P-A, "Realistic Large Break LOCA Evaluation Methodology Using Automated Statistical Treatment of Uncertainty Method (ASTRUM)" M.E. Nissley, et al., January 2005 (Proprietary).

4. WCAP-8745-P-A, "Design Bases for the Thermal Overpower $\Delta T$ and Thermal Overtemperature $\Delta T$ Trip Functions," September 1986 (Westinghouse Proprietary)

(Methodology for Overpower $\Delta T$ and Thermal Overtemperature $\Delta T$ Trip Functions)

5. WCAP-14750-P-A Revision 1, "RCS Flow Verification Using Elbow Taps at Westinghouse 3-Loop PWRs. (Westinghouse Proprietary)

(Methodology for minimum RCS flow determination using the elbow tap measurement.)

6a. WCAP-11596-P-A, "Qualification of the Phoenix-P/ANC Nuclear Design System for Pressurized Water Reactor Cores," June 1988

----------NOTE----------
Commencing Unit 1 Cycle 27 and Unit 2 Cycle 24, methods 6b and 6c shall be used in lieu of method 6a.
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6b. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON," August 2004

6c. WCAP-16045-P-A, Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," August 2007

(Methodology for LCO 3.9.1 - Boron Concentration and LCO 3.1.3 - Moderator Temperature Coefficient.)

(continued)

5.6 Reporting Requirements

5.6.5 CORE OPERATING LIMITS REPORT (COLR) (continued)

7. WCAP-11397-P-A "Revised Thermal Design Procedure," April 1989

(Methodology for LCO 2.1.1-Reactor Core Safety Limits, LCO 3.4.1-RCS Pressure, Temperature and Flow Departure from Nucleate Boiling Limits.)

8. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997.

(Methodology for LCO 3.1.3 - Moderator Temperature Coefficient.)

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

a. The reactor coolant system pressure and temperature limits, including heatup and cooldown rates and the LTOP System applicability temperature, shall be established and documented in the PTLR for the following:

LCO 3.4.3, "RCS Pressure and Temperature (P/T) Limits," and
LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."

b. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in WCAP-14040-A, Revision 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves," May 2004.

c. The PTLR shall be provided to the NRC upon issuance for each reactor fluence period and for any revision or supplement thereto.

(continued)

5.6 Reporting Requirements

5.6.7 EDG Failure Report

If an individual emergency diesel generator (EDG) experiences four or more valid failures in the last 25 demands, these failures shall be reported within 30 days. Reports on EDG failures shall include a description of the failures, underlying causes, and corrective actions taken per the Emergency Diesel Generator Reliability Monitoring Program.

5.6.8 PAM Report

When a report is required by Condition B or F of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.9 Deleted

5.6.10 Steam Generator (SG) Tube Inspection Report

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with the Specification 5.5.9, Steam Generator (SG) Program. The report shall include:

a. The scope of inspections performed on each SG,

b. Degradation mechanisms found,

c. Nondestructive examination techniques utilized for each degradation mechanism,

d. Location, orientation (if linear), and measured sizes (if available) of service induced indications,

e. Number of tubes plugged during the inspection outage for each degradation mechanism,

f. The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator.

g. The results of condition monitoring, including the results of tube pulls and in-situ testing.

5.6.11 Alternate AC (AAC) Source Out of Service Report

The NRC shall be notified if the AAC source is out of service for greater than 10 days.

VOGTLE ELECTRIC GENERATING PLANTS

ATTACHMENT TO

TO LICENSE AMENDMENT NO. 174

RENEWED FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

TO LICENSE AMENDMENT NO. 156

RENEWED FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following pages of the Renewed Facility Operating License and Appendix "A" Technical Specifications (TSs) with the enclosed pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

| Remove | Insert |
|---|---|
| License | License |
| NPF-68, page 4 | NPF-68, page 4 |
| NPF-81, page 3 | NPF-81, page 3 |
| TSs | TSs |
| 3.1.3-2 | 3.1.3-2 |
| 5.6-3 | 5.6-3 |
| 5.6-4 | 5.6-4 |

(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. 174 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) Southern Nuclear Operating Company shall be capable of establishing containment hydrogen monitoring within 90 minutes of initiating safety injection following a loss of coolant accident.

(4) Deleted

(5) Deleted

(6) Deleted

(7) Deleted

(8) Deleted

(9) Deleted

(10) Mitigation Strategy License Condition

The licensee shall develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

(a) Fire fighting response strategy with the following elements:
1. Pre-defined coordinated fire response strategy and guidance
2. Assessment of mutual aid fire fighting assets
3. Designated staging areas for equipment and materials
4. Command and control
5. Training of response personnel

(b) Operations to mitigate fuel damage considering the following:
1. Protection and use of personnel assets
2. Communications
3. Minimizing fire spread
4. Procedures for Implementing integrated fire response strategy
5. Identification of readily-available pre-staged equipment
6. Training on integrated fire response strategy

(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 Comission 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. 156 and the Environmental Protection Plan contained in Appendix B, botn 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

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.1.3.1 | Verify MTC is within BOL limit. | Once prior to entering MODE 1 after each refueling |
| SR 3.1.3.2 | ----------NOTES----------<br>1. Not required to be performed until 7 EFPD after reaching the equivalent of an equilibrium RTP all rods out (ARO) boron concentration of 300 ppm.<br>2. SR 3.1.3.2 is not required to be performed by measurement provided that the benchmark criteria in WCAP-13749-P-A are satisfied and the Revised Predicted MTC satisfies the 300 ppm surveillance limit specified in the COLR.<br>3. If the MTC is more negative than the 300 ppm Surveillance limit (not LCO limit) specified in the COLR, SR 3.1.3.2 shall be repeated once per 14 EFPD during the remainder of the fuel cycle.<br>4. SR 3.1.3.2 need not be repeated if the MTC measured at the equivalent of equilibrium RTP-ARO boron concentration of $\leq$ 60 ppm is less negative than the 60 ppm Surveillance limit specified in the COLR.<br>----------<br>Verify MTC is within EOL limit. | Once each cycle |

5.6 Reporting Requirements (continued)

5.6.5 Core Operating Limits Report (COLR)

a. Core operating limits shall be established prior to each reload cycle, or prior to any remaining portion of a reload cycle, and shall be documented in the COLR for the following:

LCO 3.1.1 "SHUTDOWN MARGIN"
LCO 3.1.3 "Moderator Temperature Coefficient"
LCO 3.1.5 "Shutdown Bank Insertion Limits"
LCO 3.1.6 "Control Bank Insertion Limits"
LCO 3.2.1 "Heat Flux Hot Channel Factor"
LCO 3.2.2 "Nuclear Enthalpy Rise Hot Channel Factor"
LCO 3.2.3 "Axial Flux Difference"
LCO 3.9.1 "Boron Concentration"

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

WCAP-9272-P-A, "WESTINGHOUSE RELOAD SAFETY EVALUATION METHODOLOGY," July 1985 (W Proprietary). (Methodology for Moderator Temperature Coefficient, Shutdown Bank Insertion Limit, Control Bank Insertion Limits, and Nuclear Enthalpy Rise Hot Channel Factor.)

WCAP-10216-P-A, Revision 1A, "RELAXATION OF CONSTANT AXIAL OFFSET CONTROL FQ SURVEILLANCE TECHNICAL SPECIFICATION," February, 1994 (W Proprietary). (Methodology for Axial Flux Difference (Relaxed Axial Offset Control) and Heat Flux Hot Channel Factor (W(Z) surveillance requirements for $F_Q$ Methodology).)

WCAP-10266-P-A, Revision 2, "The 1981 Version of the Westinghouse ECCS Evaluation Model Using the BASH Code," March 1987.

WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997.

WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON," August 2004 (Methodology for Moderator Temperature Coefficient.)

WCAP-16045-P-A, Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," August 2007 (Methodology for Moderator Temperature Coefficient.)

(continued)

5.6 Reporting Requirements (continued)

5.6.5 Core Operating Limits Report (COLR) (continued)

c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

5.6.6 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)

a. RCS pressure and temperature limits for heatup, cooldown, operation, criticality, and hydrostatic testing as well as heatup and cooldown rates shall be established and documented in the PTLR for the following:

LCO 3.4.3 "RCS Pressure and Temperature (P/T) Limits"

b. The power operated relief valve lift settings required to support the Cold Overpressure Protection Systems (COPS) and the COPS arming temperature shall be established and documented in the PTLR for the following:

LCO 3.4.12 "Cold Overpressure Protection Systems"

c. The analytical methods used to determine the RCS pressure and temperature limits shall be those previously reviewed and approved by the NRC, specifically those described in the following documents:

1. WCAP-14040-A, Rev. 4, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."

2. WCAP-16142-P, Rev. 1, "Reactor Vessel Closure Head/Vessel Flange Requirements Evaluation for Vogtle Units 1 and 2."

3. The PTLR will contain the complete identification for each of the TS reference Topical Reports used to prepare the PTLR (i.e., report number, title, revision, date, and any supplements).

(continued)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

AMENDMENT NO. 198 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

AMENDMENT NO. 194 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

AND

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

AMENDMENT NO. 174 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-68

AMENDMENT NO. 156 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

DOCKET NOS. 50-348, 50-364, 50-424, AND 50-425

## 1.0 INTRODUCTION

By application dated September 17, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14267A030), as supplemented by letter dated February 13, 2015 (ADAMS Accession No. ML15050A253), Southern Nuclear Operating Company (SNC, the licensee) submitted a request to change the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, and Vogtle Electric Generating Plant, Units 1 and 2 (VEGP) Technical Specifications (TSs) and Surveillance Requirements (SRs).

The supplement dated February 13, 2015, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on December 2, 2014 (79 FR 71455).

The proposed changes would revise the Vogtle and Farley, Units 1 and 2, TS SR 3.1.3.2 to allow the normally-required near-End-Of-Cycle (EOC) Moderator Temperature Coefficient (MTC) measurement to not be performed under certain conditions. If these conditions are met, the MTC measurement would be replaced by a calculated value, which would be compared to the cycle-specific EOC MTC limit specified in each unit's Core Operating Limits Report (COLR).

Background

On October 9, 1996, the U.S. Nuclear Regulatory Commission (NRC) staff approved the Westinghouse topical report WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," [Reference 3] for reference in licensing applications. WCAP-13749-P-A provides a methodology for licensees to be exempted from performing the near-EOC MTC measurement provided the core operating characteristics meet certain conditions. If these conditions are met, the TS SR may be satisfied by comparing a corrected predicted value of the MTC to the surveillance limit listed in the COLR. The conclusion of the NRC's Safety Evaluation (SE) for WCAP-13749-P-A included two conditions on the use of the methodology, stating that "... the analysis for the proposed TS change is acceptable provided (1) only PHOENIX/ANC calculation methods are used for the individual plant analysis relevant to the determinations for the end-of-life (EOL) MTC methodology and (2) the predictive correction is reexamined if changes in core fuel designs or continued MTC calculation/measurement data show significant effect on the predictive correction."

On March 18, 2004, the NRC staff approved the Westinghouse topical report WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON." [Reference 4] PARAGON, a lattice physics code, provides cross-sections to the Westinghouse nodal core simulator code, ANC, replacing PHOENIX-P. The conclusion to the staff's SE for WCAP-16045-P-A explicitly endorsed this replacement, stating in part that "the staff considers the new PARAGON code to be well qualified as a stand-alone code replacement for the PHOENIX-P lattice code, wherever the PHOENIX-P code is used in NRC-approved methodologies. The NRC staff concludes that it is acceptable for licensing applications."

WCAP-16045-P-A was later supplemented with Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," [Reference 5] which was approved for licensing applications by the NRC staff on February 23, 2007. NEXUS includes both a re-parameterization of the PARAGON output and a new power reconstruction approach in ANC, and therefore serves to link the two codes. The NRC staff's SE for NEXUS states that "the NEXUS/ANC code system is adequate to replace the PARAGON/ANC code system wherever the latter is used in NRC-approved methodologies. The NRC staff, furthermore, has determined that NEXUS/ANC is qualified as a stand-alone code system so long as its use is limited by the provisions listed in Section 4.0 of this safety evaluation." The sole condition limits the usage of NEXUS to uranium-fueled pressurized-water reactors (PWRs). However, in reviews of previous license amendment requests [Reference 6, for example] proposing the use of NEXUS, the NRC staff has determined that it is necessary for licensees to provide COLR references for both WCAP-16045-P-A, the original PARAGON topical report, as well as WCAP-16045-P-A, Addendum 1-A, the NEXUS topical report.

## 2.0 REGULATORY EVALUATION

10 CFR 50.36(c)(2) provides the requirement for the establishment of technical specification limiting conditions for operation (LCOs), stating:

> (ii) A technical specification limiting condition for operation of a nuclear reactor must be established for each item meeting one or more of the following criteria: ...

> (B) *Criterion 2.* A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

10 CFR 50.36(c)(3) provides additional regulations for the establishment of surveillance requirements (SRs), stating:

> (3) *Surveillance requirements.* Surveillance requirements are the requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

MTC is one of the process variables that fits Criterion 2 of 10 CFR 50.36(c)(2)(ii), with limits established in LCO 3.1.3 for both Vogtle and Farley. These limits, which are verified by SR 3.1.3.2, provide reasonable assurance that the value of the coefficient remains bounded by the condition assumed in the final safety analysis report (FSAR) accident and transient analyses. Operation within the design basis documented in the FSAR helps provide reasonable assurance that the reactor will be operated in a safe manner.

The LCO limits and SR acceptance criteria for Farley and Vogtle are contained within the plants' respective COLRs. The use of the COLR is supported by the guidance in NRC Generic Letter (GL) 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," which indicates that it is acceptable for licensees to control reactor physics parameter limits by specifying an NRC-approved calculation methodology. These parameter limits may be removed from the TS and placed in an administratively-controlled cycle-specific COLR, which is defined in the TS and required to be submitted to the NRC every operating cycle or each time it is revised. As recommended by GL 88-16, the Vogtle and Farley TSs include lists of references for the NRC-approved calculation methodologies used to generate the cycle-specific operating limits. The change requested to TS 5.6.5 would add WCAP-13749-P-A as a COLR reference in this list.

Topical reports WCAP-13749-P-A, WCAP-16045-P-A, and WCAP-16045-P-A Addendum 1-A have all been reviewed and approved by the NRC staff. This review will therefore focus on verifying that the methodologies are applicable at Vogtle and Farley and that the conditions and limitations of the generic approval are satisfied for the Vogtle- and Farley-specific applications.

## 3.0 TECHNICAL EVALUATION

### 3.1 Description of Changes

The proposed TS changes are:

1. A revision to SR 3.1.3.2 that would exempt the requirement to perform a near-EOC MTC measurement provided that the benchmark criteria in WCAP-13749-P-A are satisfied and the surveillance limit specified in the COLR is met by the revised predicted MTC, which is calculated according to the methodology in WCAP-13749-P-A.

2. A revision to TS 5.6.5, "Core Operating Limits Report," that would add the following topical report to the list of references for the Vogtle and Farley COLRs:

a. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997.

3.2 Reason for Changes

As previously discussed, TS 3.1.3 places limits on the MTC such that plant operation will be bounded by the accident analysis assumptions. However, as described in WCAP-13749-P-A, Westinghouse accident and transient analyses assume a bounding value for the moderator density coefficient (MDC). Because moderator temperature is measurable in the plant, unlike density, MTC is used for plant limits in place of MDC. The most positive MDC corresponds to the most negative MTC due to the inverse relationship between coolant temperature and density.

The most negative MTC LCO limit requires the MTC to be less negative than the specified limit for a condition that corresponds to all-rods-out (ARO) EOC rated thermal power (RTP) operation. To demonstrate compliance with the most negative MTC LCO, the surveillance required by SR 3.1.3.2 entails verification of the MTC after an equilibrium core boron concentration of 300 parts per million (ppm) is reached. From the time that a 300 ppm boron concentration is reached to the end of the cycle, the hot full power (HFP) MTC will gradually become more negative due to boron concentration reduction and additional core burnup. To account for this effect, the 300 ppm MTC surveillance limit is sufficiently less negative than the EOC LCO limit to ensure that the LCO limit will be met as long as the 300 ppm MTC surveillance limit is met.

TS 3.1.3 currently requires two measurements of MTC: one at hot zero power (HZP) beginning-of-cycle (BOC) conditions to verify that the plant will operate within the most positive MTC limit, and a second at HFP near-EOC conditions to verify that the plant will operate within the most negative MTC limit. MTC is not directly measured; rather, it is obtained by subtracting calculated values of the Doppler temperature coefficient (DTC) from measurements of the isothermal temperature coefficient (ITC).

At BOC HZP conditions, the ITC measurement is relatively accurate and simple to perform because it is done at isothermal conditions and is not complicated by changes in the core enthalpy rise or the presence of xenon. According to the licensee, the EOC HFP MTC measurement is much more difficult to perform because it is made at or near HFP conditions. HFP operation may result in minor perturbations to the soluble boron concentration, xenon concentration and distribution, fuel temperature, enthalpy rise, and other significant parameters. Any or all of these parameters may have an impact on the moderator temperature coefficient and potentially result in significant measurement uncertainty, yielding inaccurate measurement results if not accounted for properly during the test.

The licensee also indicated that a motivating factor for the conditional EOC MTC measurement exemption is that the MTC measurement includes time at reduced power in order to perform the measurement. As well, the test deliberately introduces a perturbation into normal reactor operations, and the licensee is concerned that the measurement increases potential for human performance errors involving reactivity manipulation. The use of this conditional exemption method was therefore proposed by the licensee to improve plant availability and minimize perturbations on plant operation.

3.3 Evaluation of TS Changes

*3.3.1 Changes to SR 3.1.3.2*

The licensee proposed implementation of the methodology described in WCAP-13749-P-A, which was approved by the NRC with the following conditions:

1. Only PHOENIX/ANC calculation methods are [to be] used for the individual plant analyses relevant to determinations for the EOL MTC plant methodology.
2. The predictive correction [shall be] reexamined if changes in core fuel designs or continued MTC calculation measurement data show significant effect on the predictive correction.

The license amendment request (LAR) submitted by the licensee provided dispositions to these conditions, both of which concluded that the conditions will be met.

3.3.1.1 WCAP-13749-P-A Condition 1

The licensee stated in the first condition's disposition that Farley and Vogtle core design calculations are currently being transitioned from the PHOENIX-P lattice physics code to PARAGON. For the future core design calculations, the licensee also plans to use the NEXUS methodology, which consists of both a re-parameterization of the PARAGON output and a new reconstruction approach in the ANC core simulator code. As previously discussed, PARAGON and NEXUS are described in WCAP-16045-P-A and its Addendum 1-A, respectively.

The licensee also stated that PARAGON/ANC and NEXUS/ANC are qualified as direct substitutes for the PHOENIX-P/ANC code system, citing language (provided in Section 3 of this SE) from the NRC staff's safety evaluations for WCAP-16045-P-A and Addendum 1-A. To further support this assertion, the licensee provided additional quantitative data in Enclosure 9 of the LAR. Similar data had been requested by the NRC staff in a previous review of the application of WCAP-13749-P-A at Beaver Valley [Reference 7]. The data included (a) measured and PHOENIX-P/ANC-calculated values of BOC HZP MTC for recent cycles at Farley and Vogtle and (b) benchmarks comparing PHOENIX-P/ANC and NEXUS/ANC computations of critical boron concentration, BOC HZP ITC, and EOC HFP MTC, based on calculations and measurements from recent cores throughout the PWR fleet.

The NRC staff analyzed this data to determine whether or not the numerical value of the predictive correction developed in WCAP-13749-P-A remains valid for new neutronics codes and modern core designs. The value of the predictive correction term is based largely on the variance of the measured minus predicted BOC HZP ITC, which is combined with two other correction factors, as discussed in WCAP-13749-P-A. As discussed in the approving SE for WCAP-13749-P-A, the NRC staff determined generically for the conditional exemption methodology that the overall predictive correction was conservative. Because the two correction factors are not changed in this current application, the NRC staff therefore focused on the BOC HZP ITC data provided by the licensee. Tests on the means and variances of the data demonstrated that the PHOENIX-P/ANC prediction of BOC HZP ITC for new cores was not statistically distinguishable from that of historic cores originally shown in WCAP-13749-P-A. The tests also showed that for modern cores NEXUS/ANC provides a more precise (lower variance)

calculation of BOC HZP ITC than originally provided in WCAP-13749 with approximately the same accuracy. However, the NRC staff observed qualitatively significant differences between the critical boron calculations provided in WCAP-13749-P-A and Enclosure 9 to the LAR. In response to an NRC staff RAI regarding these calculations, the licensee responded that the new calculations did not account for boron-10 depletion, causing the observed increase in the measured-to-predicted difference in critical boron concentration in the middle of the cycle [Reference 2]. The NRC staff determined that this explanation adequately explained the observed response.

The NRC staff has therefore determined that the variance in measured minus predicted BOC HZP ITC using NEXUS/ANC for contemporary cores will be bounded by the value presented in WCAP-13749-P-A. The NRC staff also determined that the licensee adequately explained the increased error in the critical boron concentration for the new cores and codes. Because of this, the NRC staff concluded that the predictive correction approved by the NRC for WCAP-13749-P-A is appropriate for the PARAGON-NEXUS/ANC code system as used in the analysis of contemporary cores. The licensee therefore satisfies the first condition.

3.3.1.2 WCAP-13749-P-A Condition 2

The second condition requires the predictive correction to be re-evaluated if new measured minus predicted EOC HFP MTC data show a "significant effect" on the predictive correction or if core fuel design changes could have such an effect. Neither the NRC contractor's technical report on WCAP-13749-P-A nor the NRC staff's SE provides a definition of what constitutes a "significant effect." However, the NRC staff has previously stated when reviewing applications of WCAP-13739-P-A that a significant effect would be a change in the standard deviation of measured minus predicted EOC HFP MTC such that the predictive correction discussed previously is no longer bounding.

The NRC staff therefore understands the second condition to mean that the EOC HFP MTC measurement will be performed in the cycle following a plant change that could cause a significant effect by altering the standard deviation of the measured minus predicted data or the behavior of MTC in the reactor. The NRC staff considers such changes to include, but not be limited to, the following:

1. an increase in the allowable core thermal power of greater than two percent,
2. a change in design operating cycle length from the current strategy of eighteen month operating cycles to annual or twenty four month operating cycles, or
3. the introduction of a new reload batch fuel product line (excluding Lead Test Assembly (LTA) programs).

SNC's disposition of condition 2 in the LAR states:

> Prior to the use of the conditional elimination technique, SNC will confirm that core design changes and MTC calculation and measurement data do not show a significant effect on the predictive correction. If a significant effect is found, the use of the predictive correction will be re-examined.

The WCAP-13749-P-A methodology also requires certain core performance criteria, such as startup physics tests and cycle reactivity measurements, to be met to allow exemption of the EOC HFP MTC measurement. This requirement is captured in the licensee's proposed changes to SR 3.1.3.2 for both Farley and Vogtle. Because SNC has (1) stated that the effects of core design changes will be verified relative to the use of the predictive correction and (2) Vogtle and Farley will be required by the TS to adhere to the core acceptance criteria of WCAP-13749-P-A, the NRC staff determined that condition 2 is satisfied.

3.3.1.3 SR 3.1.3.2 Conclusion

Because both conditions of WCAP-13749-P-A were found to be satisfied, the NRC staff therefore determined that the use of WCAP-13749-P-A is acceptable as the basis for modifications of SR 3.1.3.2. The NRC staff reviewed the proposed changes to SR 3.1.3.2 in this context and determined that they were acceptable.

*3.3.2 Changes to TS 5.6.5*

SNC proposed changes to TS 5.6.5 to add WCAP-13749-P-A as a reference methodology used in the preparation of the COLR. Because the NRC staff determined above that the use of WCAP-13749-P-A was acceptable at both Farley and Vogtle, the proposed changes to TS 5.6.5 are also acceptable.

As stated previously, in past licensing efforts involving PARAGON and NEXUS the NRC staff has required licensees to include both WCAP-16045 and addendum in the facility list of COLR references. At Farley, these topical reports were already listed in TS 5.6.5, "Core Operating Limits Report," and were added as part of a past LAR. For Vogtle the licensee proposed, in their response [Reference 2] to an NRC RAI, to add WCAP-16045-P-A and addendum to the TS 5.6.5b COLR reference list as part of the current license amendment request review. The NRC staff therefore determined that the requirement to include both PARAGON and NEXUS in the list of COLR references is satisfied for both Farley and Vogtle.

3.4 Conclusion

The NRC staff reviewed the information provided by SNC and determined that WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," is applicable at both Vogtle and Farley with the NEXUS/ANC nuclear methodology described in WCAP-16045-P-A and Addendum 1-A. The NRC staff also evaluated the licensee's proposed modifications to TS 3.1.3, "Moderator Temperature Coefficient," and TS 5.6.5, "Core Operating Limits Report," and determined that they are acceptable based on the applicability of the WCAP-13749-P-A methodology.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of Alabama official and the State of Georgia was notified of the proposed issuance of the amendments. The State officials 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 changes 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 (79 FR 71455, December 2, 2014). 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) there is reasonable assurance that 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.

## 7.0 REFERENCES

1. Pierce, C.R., Southern Nuclear Operating Company (SNC), to NRC Document Control Desk (DCD), "Joseph M. Farley Nuclear Plant – Units 1 and 2 Vogtle Electric Generating Plant – Units 1 and 2 License Amendment Request to Revise Technical Specification Surveillance Requirement 3.1.3.2 and Specification 5.6.5," September 17, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14267A030).

2. Pierce, C.R., SNC, to NRC DCD, "Joseph M. Farley Nuclear Plant – Units 1 and 2 Vogtle Electric Generating Plant – Units 1 and 2 Response to Request for Additional Information Regarding the License Amendment Request to Revise Technical Specification Surveillance Requirement 3.1.3.2 and Specification 5.6.5," February 13, 2015 (ADAMS Accession No. ML15050A253).

3. WCAP-13749-P-A, "Safety Evaluation Supporting The Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," Westinghouse Electric Company, March 1997 (ADAMS Accession No. ML14358A301 (proprietary)).

4. WCAP-16045-P-A, "Qualification of the Two-Dimensional Transport Code PARAGON," Westinghouse Electric Company, August 2004 (ADAMS Accession Nos. ML042250345 (non-proprietary) and ML080630393 (proprietary).

5. WCAP-16045-P-A, Addendum 1-A, "Qualification of the NEXUS Nuclear Data Methodology," Westinghouse Electric Company, August 2007 (ADAMS Accession Nos. ML072570329 (non-proprietary) and ML072570352 (proprietary)).

6. Brown, E., NRC, to C.R. Pierce, SNC, "Joseph M. Farley Nuclear Plant, Units 1 and 2, Issuance of Amendments Regarding Changes to Nuclear Methodology References (TAC Nos. ME9244 and ME9245)(NL-12-1226)," July 17, 2013 (ADAMS Accession No. ML13149A354).

7. Whited, J.A., NRC, to E.A. Larson, First Energy Nuclear Operating Company (FENOC), "Beaver Valley Power Station, Unit Nos. 1 and 2 – Issuance of Amendments Regarding Technical Specification 3.1.3, "Moderator Temperature Coefficient Measurement" (TAC Nos. ME9144 and ME9145)," September 17, 2014 (ADAMS Accession No. ML14245A151).

Principal Contributors:
Reed Anzalone, NRR/DSS/SNPB

Date: June 2, 2015

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

Sincerely,

**/RA/**

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-348, 50-364, 50-424, 50-425

Enclosures:
1. Amendment No. 198 to NPF-2
2. Amendment No. 194 to NPF-8
3. Amendment No. 174 to NPF-68
4. Amendment No. 156 to NPF-81
5. Safety Evaluation

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