



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

March 31, 2020

Ms. Cheryl A. Gayheart
Regulatory Affairs Director
Southern Nuclear Operating Co.
3535 Colonnade Parkway
Birmingham, AL 35243

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, AND VOGTLE
ELECTRIC GENERATING PLANT, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENTS REGARDING APPLICATION TO REVISE TECHNICAL
SPECIFICATIONS TO ADOPT TSTF-569, "REVISE RESPONSE TIME
TESTING DEFINITION" (EPID L-2019-LLA-0276)

Dear Ms. Gayheart:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 227 to Renewed Facility Operating License No. NPF-2 and Amendment No. 224 to Renewed Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant (Farley), Units 1 and 2, respectively, and the enclosed Amendment No. 203 to Renewed Facility Operating License No. NPF-68 and Amendment No. 186 to Renewed Facility Operating License No. NPF-81 for the Vogtle Electric Generating Plant (Vogtle), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated December 10, 2019.

The amendments adopt Technical Specifications Task Force (TSTF) traveler TSTF-569, "Revise Response Time Testing Definition," which is an NRC-approved change to the Improved Standard Technical Specifications, into the Farley, Units 1 and 2, and Vogtle, Units 1 and 2, TSs. The amendments revise the TS Definitions for "Engineered Safety Feature (ESF) Response Time" and "Reactor Trip System (RTS) Response Time."

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/

John G. Lamb, 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,
and 50-425

Enclosures:

1. Amendment No. 227 to NPF-2
2. Amendment No. 224 to NPF-8
3. Amendment No. 203 to NPF-68
4. Amendment No. 186 to NPF-81
5. Safety Evaluation

cc w/encls: Listserv



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

SOUTHERN NUCLEAR OPERATING COMPANY

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 227
Renewed License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Southern Nuclear Operating Company (Southern Nuclear), dated December 10, 2019, 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 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. 227, are hereby incorporated in the renewed 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment:
Changes to the Renewed Operating License
and Technical Specifications

Date of Issuance: March 31, 2020



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

SOUTHERN NUCLEAR OPERATING COMPANY

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 224
Renewed License No. NPF-8

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Southern Nuclear Operating Company (Southern Nuclear), dated December 10, 2019, 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 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-8 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 224, are hereby incorporated in the renewed 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment:
Changes to the Renewed Operating License
and Technical Specifications

Date of Issuance: March 31, 2020

ATTACHMENT TO LICENSE AMENDMENT NOS. 227 AND 224

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

RENEWED FACILITY OPERATING LICENSE NOS. NPF-2 AND NPF-8

DOCKET NOS. 50-348 AND 50-364

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

Remove Pages

License

License No. NPF-2, page 4
License No. NPF-8, page 3

TSs

1.1-3
1.1-5

Insert Pages

License

License No. NPF-2, page 4
License No. NPF-8, page 3

TSs

1.1-3
1.1-5

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 227, 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 byproducts, 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 incorporate 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. 224 are hereby incorporated in the renewed license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.
 - (3) Delete per Amendment 144
 - (4) Delete per Amendment 149
 - (5) Delete per Amendment 144

1.1 Definitions

ENGINEERED SAFETY FEATURE (ESF) RESPONSE TIME

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

INSERVICE TESTING PROGRAM

The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator (SG) to the Secondary System;

b. Unidentified LEAKAGE

All LEAKAGE (except RCP seal water injection or leakoff) that is not identified LEAKAGE;

(continued)

1.1 Definitions

PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates and the Low Temperature Overpressure Protection System applicability temperature, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 2775 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.
SHUTDOWN MARGIN (SDM)	<p>SDM shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:</p> <ol style="list-style-type: none"> All rod cluster control assemblies (RCCAs) are fully inserted except for the single RCCA of highest reactivity worth, which is assumed to be fully withdrawn. However, with all RCCAs verified fully inserted by two independent means, it is not necessary to account for a stuck rod in the SDM calculation. With any RCCA not capable of being fully inserted, the reactivity worth of the RCCA must be accounted for in the determination of SDM; and

(continued)



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. 203
Renewed 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) 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 December 10, 2019, 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 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:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 203, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment:
Changes to the Renewed Operating License
and Technical Specifications

Date of Issuance: March 31, 2020



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. 186
Renewed 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) 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 December 10, 2019, 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 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:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 186, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment:
Changes to the Renewed Operating License
and Technical Specifications

Date of Issuance: March 31, 2020

ATTACHMENT TO LICENSE AMENDMENT NOS. 203 AND 186

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

RENEWED FACILITY OPERATING LICENSE NOS. NPF-68 AND NPF-81

DOCKET NOS. 50-424 AND 50-425

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

Remove Pages

License

License No. NPF-68, page 4
License No. NPF-81, page 3

TSs

1.1-3
1.1-5

Insert Pages

License

License No. NPF-68, page 4
License No. NPF-81, page 3

TSs

1.1-3
1.1-5

(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. 203, 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 and 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 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. 186, 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

1.1 Definitions (continued)

 **\bar{E} - AVERAGE
DISINTEGRATION ENERGY**

\bar{E} shall be the average (weighted in proportion to the concentration of each radionuclide in the reactor coolant at the time of sampling) of the sum of the average beta and gamma energies per disintegration (in MeV) for isotopes, other than iodines, with half lives > 14 minutes, making up at least 95% of the total noniodine activity in the coolant.

**ENGINEERED SAFETY
FEATURE (ESF) RESPONSE
TIME**

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

**INSERVICE TESTING
PROGRAM**

The INSERVICE TESTING PROGRAM is the licensee program that fulfills the requirements of 10 CFR 50.55a(f).

LEAKAGE

LEAKAGE shall be:

a. Identified LEAKAGE

1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) seal water injection or leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE);

(continued)

1.1 Definitions

PHYSICS TESTS (continued)	<ul style="list-style-type: none"> a. Described in Chapter 14 of the FSAR; b. Authorized under the provisions of 10 CFR 50.59; or c. Otherwise approved by the Nuclear Regulatory Commission.
PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)	The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heatup and cooldown rates, Cold Overpressure Protection System (COPS) arming temperature and the nominal PORV setpoints for the COPS, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6. Unit operation within these operating limits is addressed in individual specifications.
QUADRANT POWER TILT RATIO (QPTR)	QPTR shall be the ratio of the maximum upper excore detector calibrated output to the average of the upper excore detector calibrated outputs, or the ratio of the maximum lower excore detector calibrated output to the average of the lower excore detector calibrated outputs, whichever is greater.
RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3625.6 MWt.
REACTOR TRIP SYSTEM (RTS) RESPONSE TIME	The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

(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. 227 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

AMENDMENT NO. 224 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

AND

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

AMENDMENT NO. 203 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-68

AMENDMENT NO. 186 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY

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

1.0 INTRODUCTION

By application dated December 10, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19344B804), Southern Nuclear Operating Company (SNC, the licensee) submitted a license amendment request (LAR) for Joseph M. Farley Nuclear Plant (Farley), Units 1 and 2, and Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. The proposed amendments would revise the Technical Specifications (TSs) definitions for "Engineered Safety Feature (ESF) Response Time" and "Reactor Trip System (RTS) Response Time" that are referenced in Surveillance Requirements (SRs), and hereafter referred to as response time testing (RTT).

The proposed amendments are based on Technical Specifications Task Force (TSTF) traveler TSTF-569, Revision 2, "Revise Response Time Testing Definition," dated June 25, 2019 (ADAMS Accession No. ML19176A034). The U.S. Nuclear Regulatory Commission (NRC, the Commission) staff issued a final safety evaluation (SE) approving TSTF-569, Revision 2, on August 14, 2019 (ADAMS Package Accession No. ML19176A188).

The licensee has proposed variations from the TS changes described in TSTF-569, Revision 2. The variations are described in Section 2.2.1 of this SE and evaluated in Section 3.3.

2.0 REGULATORY EVALUATION

2.1 DESCRIPTION OF RESPONSE TIME TESTING

The RTS initiates a unit shutdown, based on the values of selected unit parameters, to protect against violating the core fuel design limits and the reactor coolant system pressure boundary during anticipated operational occurrences and to assist the engineering safety feature actuation system (ESFAS) in mitigating accidents. The ESFAS initiates necessary safety systems, based on the values of selected unit parameters, to protect against violating core design limits and the reactor coolant system pressure boundary, and to mitigate accidents.

The RTT verifies that the individual channel or train actuation response times are less than or equal to the maximum values assumed in the accident analyses. The RTT acceptance criteria are under licensee control. Individual component response times are not modeled in the accident analyses. The analyses model the overall or total elapsed time, from the point at which the parameter exceeds the trip setpoint value at the sensor to the point at which the equipment reaches the required functional state (e.g., control and shutdown rods fully inserted in the reactor core).

2.2 PROPOSED CHANGES TO THE TECHNICAL SPECIFICATIONS

The licensee proposed to revise the RTT TS definitions in Section 1.1 of the TS. Specifically, the proposed changes would revise the TS definitions to eliminate the requirement for prior NRC review and approval of the response time verification of new pressure sensor components and protection channel components, while still requiring verification to be performed using the standard methodology contained in NRC-approved TSTF-569, Revision 2, Attachment 1, "Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plant only) Response Time Testing." The proposed changes would allow the licensee to verify the response time of similar/comparable component types to those components being replaced without prior NRC approval for each set of different components being installed.

The proposed changes would revise the following TS definitions in Section 1.1:

- "Engineered Safety Feature (ESF) Response Time," and
- "Reactor Trip System (RTS) Response Time."

The definitions would be revised to state the following (with changes underlined):

Engineered Safety Feature (ESF) Response Time

The ESF RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ESF actuation setpoint at the channel sensor until the ESF equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values, etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

Reactor Trip System (RTS) Response Time

The RTS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RTS trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by the NRC, or the components have been evaluated in accordance with an NRC approved methodology.

The proposed changes would be accompanied by conforming changes to the TS Bases.

2.2.1 Variations from TSTF-569, Revision 2

The licensee proposed the following variations from the TS and TS Bases changes described in TSTF-569 or the applicable parts of the NRC staff's SE of TSTF-569.

The Farley and Vogtle definitions of ESF Response Time have two editorial differences as compared to TSTF-569. Specifically, they state "ESF actuation setpoint" instead of "actuation setpoint" and "the methodology" instead of "methodology." The Farley and Vogtle definitions of RTS Response Time have one editorial difference as compared to TSTF-569. Specifically, they state "the methodology" instead of "methodology."

TSTF-569 changes the TS Bases for Standard Technical Specifications (STS) SR 3.3.1.16 by adding a statement that contains three References (i.e., References 10, 15, and 16). The Farley and Vogtle TS utilize different numbering than the STS. Specifically, the corresponding Farley SR is SR 3.3.1.14 and the corresponding Farley References are 18, 19, and 24; the corresponding Vogtle SR is SR 3.3.1.15 and the corresponding Vogtle References are 12, 13, and 14.

TSTF-569 changes the TS Bases for STS SR 3.3.2.10 by adding a statement that contains three References (i.e., 14, 15, and 16). The Farley and Vogtle TS utilize different numbering than the STS. Specifically, the corresponding Farley SR is SR 3.3.2.9 and the corresponding Farley References are 14, 15, and 20; the corresponding Vogtle SR is SR 3.3.2.8 and the corresponding Vogtle References are 11, 12, and 19.

2.3 APPLICABLE REGULATORY REQUIREMENTS AND GUIDANCE

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(a)(1) requires each applicant for a license authorizing operation of a utilization facility to include in the application proposed TSs.

The regulation at 10 CFR 50.36(b) states that:

The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"].

The Commission may include such additional technical specifications as the Commission finds appropriate.

The regulation at 10 CFR 50.40(a) states, in part, that the TSs shall provide reasonable assurance that the health and safety of the public will not be endangered.

Appendix A to 10 CFR Part 50 provides General Design Criteria (GDC) for nuclear power plants.

The regulation at 10 CFR Part 50, Appendix A, GDC 13, "Instrumentation and Control," states:

Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges.

The regulation at 10 CFR Part 50, Appendix A, GDC 21, "Protection System Reliability and Testability," states:

The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

The NRC staff's guidance for the review of TSs is in Chapter 16.0, Revision 3, "Technical Specifications," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition" (SRP), March 2010 (ADAMS Accession No. ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared STS for each of the LWR nuclear designs. Accordingly, the NRC staff's review includes consideration of whether the proposed changes are consistent with the applicable reference STS, as modified by NRC-approved travelers. The STS applicable to Farley and Vogtle is NUREG-1431, Revision 4.0, "Standard Technical Specifications, Westinghouse Plants," April 2012, Volume 1, "Specifications" (ADAMS Accession No. ML12100A222), and Volume 2, "Bases" (ADAMS Accession No. ML12100A228).

Regulatory Guide (RG) 1.118, Revision 3, "Periodic Testing of Electric Power and Protection Systems," April 1995 (ADAMS Accession No. ML003739468), endorses the Institute of Electrical and Electronics Engineers, Inc. (IEEE) Std. 338-1987, "IEEE Standard Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems," which was approved on March 3, 1988, by the American National Standards Institute.

Branch Technical Position (BTP) 7-17, "Guidance on Self-Test and Surveillance Test Provisions," August 24, 2016 (ADAMS Accession No. ML16019A316), states, in part:

Failures detected by hardware, software, and surveillance testing should be consistent with the failure detectability assumptions of the single-failure analysis and the failure modes and effects analysis.

3.0 TECHNICAL EVALUATION

3.1 PROPOSED CHANGES TO THE RESPONSE TIME TESTING DEFINITION

The proposed changes to TS Section 1.1 would eliminate required direct measurement RTT for selected pressure sensor and protection channel components but do not eliminate required surveillance testing for the entirety of an instrument channel or the system as a whole (e.g., RTS). Therefore, the NRC staff finds that the proposed changes are consistent with the surveillance testing requirements of 10 CFR 50.36.

The NRC staff confirmed that the proposed changes have no effect on the design, fabrication, use, or methods of testing of the instrumentation and will not affect the ability of the instrumentation to perform the functions assumed in the safety analysis. Therefore, compliance with the design criteria GDC 13 and GDC 21 is not affected.

The RG 1.118, Revision 3, describes acceptable methods for complying with NRC regulations pertaining to periodic testing of protection systems and power systems.

The TSTF-569, Revision 2, states the following regarding applicable design criteria:

Section 6.3.4 of IEEE Standard 338-1977, "Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems," states response time testing of all safety-related equipment, per se, is not required if, in lieu of response time testing, the response time of safety system equipment is verified by functional testing, calibration check, or other tests, or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests.

Clause 6.3.4 of IEEE 338-1987, "Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems," states response time testing shall be required only on safety systems or subsystems to verify that the response times are within the limits given in the Safety Analysis Report including Technical Specifications. Response time testing of all safety-related equipment is not required if, in lieu of response time testing, the response time of safety system equipment is verified by functional testing, calibration checks, or other tests, or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics that are detectable during routine periodic tests.

Section 5.3.4, "Response time verification tests," of IEEE Standard 338-2012, "IEEE Standard for Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems," Item c) states response time testing of all safety-related equipment is not required if, in lieu of response time testing,

the response time of safety system equipment is verified by functional testing, calibration checks, or other tests. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics that are detectable during routine periodic tests.

The traveler states that system operation, design basis, and capability for testing will remain unchanged as the replacement components comply with these design criteria. Therefore, the NRC staff found that the traveler provided an adequate technical basis and that such replacement components can continue to perform the same design functions as the original components. The NRC staff found that the methodologies contained in Attachment 1 to the traveler provide adequate criteria for ensuring that replacement components degraded response time issues or failures would be captured. Therefore, conformance with IEEE 338-2012 and 338-1987 design criteria is not affected, since the licensee is adopting TSTF-569, Revision 2.

3.2 SUMMARY

The NRC staff reviewed the proposed changes against the regulations and determined that, with the proposed changes, the TS will continue to meet the requirements of 10 CFR 50.36 and, consistent with 10 CFR 50.40, will continue to provide reasonable assurance that the health and safety of the public will not be endangered. Additionally, the NRC staff determined that the proposed changes are technically clear and consistent with customary terminology and format in accordance with SRP Chapter 16.0. Therefore, the NRC staff concludes that the proposed changes are acceptable.

3.3 VARIATIONS FROM TSTF-569, REVISION 2

The licensee described variations from TSTF-569, Revision 2, in Section 2.2 of the LAR. Specifically, the licensee proposed the following variations from the TS changes described in TSTF-569. These variations do not affect the applicability of TSTF-569 or the NRC staff's SE of TSTF-569 to the proposed LAR.

The Farley and Vogtle definitions of ESF Response Time state "ESF actuation setpoint" instead of "actuation setpoint" and "the methodology" instead of "methodology." The NRC staff determined that the use of these additional words provides clarity and does not alter the intent of this definition; therefore, the NRC staff finds that this variation does not affect the applicability of TSTF-569 or the NRC staff's SE of TSTF-569 to the proposed LAR.

The Farley and Vogtle definitions of RTS state "the methodology" instead of "methodology." The NRC staff determined that the use of this additional word provides clarity and does not alter the intent of this definition; therefore, the NRC staff finds that this variation does not affect the applicability of TSTF-569 or the NRC staff's SE of TSTF-569 to the proposed LAR.

The Farley and Vogtle TS also utilize different numbering than the STS on which TSTF-569, Revision 2, was based. Specifically, TSTF-569 adds the following paragraph to the TS Bases for STS SR 3.3.1.16.

The response time may be verified for components that replace the components that were previously evaluated in Ref. 10 and Ref. 15, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, "Methodology to

Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing,” (Ref. 16).

Reference 10 is WCAP-13632-P-A, Revision 2, “Elimination of Pressure Sensor Response Time Testing Requirements,” January 1996; Reference 15 is WCAP-14036-P, Revision 1, “Elimination of Periodic Protection Channel Response Time Tests,” December 1995; and Reference 16 is Attachment 1 to TSTF-569, “Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing.”

The corresponding SR in the Farley TS is SR 3.3.1.14 and the corresponding References are 18, 19, and 24. The corresponding SR in the Vogtle TS is SR 3.3.1.15 and the corresponding References are 12, 13, and 14.

Similarly, TSTF-569 adds the following paragraph to the TS Bases for STS SR 3.3.2.10.

The response time may be verified for components that replace the components that were previously evaluated in Ref. 14 and Ref. 15, provided that the components have been evaluated in accordance with the NRC approved methodology as discussed in Attachment 1 to TSTF-569, “Methodology to Eliminate Pressure Sensor and Protection Channel (for Westinghouse Plants only) Response Time Testing,” (Ref. 16).

The corresponding SR in the Farley TS is SR 3.3.2.9 and the corresponding References are 14, 15, and 20. The corresponding SR in the Vogtle TS is SR 3.3.2.8 and the corresponding References are 11, 12, and 19.

The NRC staff determined that these differences in the Farley and Vogtle TS Bases as compared to the STS Bases identify the corresponding SRs and References. Additionally, although the Farley and Vogtle TS Bases refer to WCAP-14036-P-A, Revision 1, “Elimination of Periodic Protection Channel Response Time Tests,” October 1998, whereas the STS Bases refer to WCAP-14036-P, Revision 1, “Elimination of Periodic Protection Channel Response Time Tests,” December 1995, these documents are substantively the same. Therefore, the differences do not alter the intent of the TS Bases and do not affect the applicability of TSTF-569 or the NRC staff’s SE of TSTF-569 to the proposed LAR.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of Alabama official and the State of Georgia official were notified of the proposed issuance of the amendments on February 4, 2020. The State officials had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change the 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, which was published in the *Federal Register* on January 28, 2020 (85 FR 5054), and there has been no public comment on such finding. 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.

Principal Contributor: Kristy Bucholtz, NRR

Date: March 31, 2020

SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, AND VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS REGARDING APPLICATION TO REVISE TECHNICAL SPECIFICATIONS TO ADOPT TSTF-569, "REVISE RESPONSE TIME TESTING DEFINITION" (EPID L-2019-LLA-0276) DATED MARCH 31, 2020

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