



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

October 2, 2017

Mr. James J. Hutto  
Regulatory Affairs Director  
Southern Nuclear Operating Company, Inc.  
P.O. Box 1295 / Bin – 038  
Birmingham, AL 35201-1295

**SUBJECT: JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2; VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 – ISSUANCE OF AMENDMENTS REGARDING THE ADOPTION OF TSTF-547, REVISION 1, “CLARIFICATION OF ROD POSITION REQUIREMENTS” (CAC NOS. MF8870, MF8871, MF8872, AND MF8873)**

Dear Mr. Hutto:

The U.S. Nuclear Regulatory Commission (NRC or the Commission) has issued the enclosed Amendment No. 214 to the Joseph M. Farley Nuclear Plant (FNP), Unit 1, Renewed Facility Operating License No. NPF-2; Amendment No. 211 to FNP, Unit 2, Renewed Facility Operating License No. NPF-8; Amendment No. 193 to the Vogtle Electric Generating Plant (VEGP), Unit 1, Renewed Facility Operating License No. NPF-68; and Amendment No. 176 to VEGP, Unit 2, Renewed Facility Operating License No. NPF-81.

The amendments are in response to your application dated November 21, 2016. The amendments revise the requirements on control and shutdown rods, and rod and bank position indication in Technical Specifications (TS) 3.1.4, “Rod Group Alignment Limits,” TS 3.1.5, “Shutdown Bank Insertion Limits,” TS 3.1.6, “Control Bank Insertion Limits,” and TS 3.1.7, “Rod Position Indication” in accordance with NRC-approved Technical Specification Task Force Traveler (TSTF)-547, Revision 1, “Clarification of Rod Position Requirements,” dated March 4, 2016 (Agencywide Documents Access and Management System Accession Package No. ML16012A126), with editorial variations from the Traveler.

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,

A handwritten signature in black ink, appearing to read "Shawn Williams".

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. 214 to NPF-2
2. Amendment No. 211 to NPF-8
3. Amendment No. 193 to NPF-68
4. Amendment No. 176 to NPF-81
5. Safety Evaluation

cc w/enclosures: Distribution via 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. 214  
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 (the facility), Renewed Facility Operating License No. NPF-2, filed by Southern Nuclear Operating Company (the licensee), dated November 21, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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.

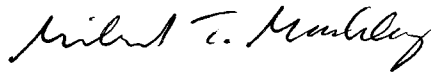
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-2 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 214, 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Renewed Operating License  
and Technical Specifications

Date of Issuance: October 2, 2017



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. 211  
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 (the facility), Renewed Facility Operating License No. NPF-8, filed by Southern Nuclear Operating Company (the licensee), dated November 21, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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.

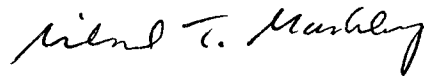
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-8 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 211, 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 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Attachment:  
Changes to the Renewed Operating License  
and Technical Specifications

Date of Issuance: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NOS. 214 AND 211

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

3.1.4-1

3.1.4-2

3.1.4-3

3.1.5-1

3.1.5-2

3.1.6-1

3.1.6-2

3.1.6-3

3.1.7-1

3.1.7-2

3.1.7-3

3.1.7-4

Insert Pages

License

License No. NPF-2, page 4

License No. NPF-8, page 3

TSs

3.1.4-1

3.1.4-2

3.1.4-3

3.1.5-1

3.1.5-2

3.1.6-1

3.1.6-2

3.1.6-3

3.1.7-1

3.1.7-2

3.1.7-3

3.1.7-4

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 214, 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. 211 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

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Rod Group Alignment Limits

LCO 3.1.4 All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more rod(s) untrippable.	A.1.1 Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	A.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.2 Be in MODE 3.	6 hours
B. One rod not within alignment limits.	B.1.1 Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	B.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 Reduce THERMAL POWER to $\leq 75\%$ RTP.	2 hours
	<u>AND</u>	
	B.3 Verify SDM to be within the limits provided in the COLR.	Once per 12 hours
	<u>AND</u>	
	B.4 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.	72 hours
	<u>AND</u>	
	B.5 Re-evaluate safety analyses and confirm results remain valid for duration of operation under these conditions.	5 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	6 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. More than one rod not within alignment limit.	D.1.1 Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	D.1.2 Initiate boration to restore required SDM to within limit.	1 hour
	<u>AND</u>	
	D.2 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.4.1 -----NOTE----- Not required to be performed for rods associated with inoperable rod position indicator or demand position indicator ----- Verify position of individual rods within alignment limit.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.2 Verify rod freedom of movement (trippability) by moving each rod not fully inserted in the core $\geq 10$ steps in either direction.	In accordance with the Surveillance Frequency Control Program
SR 3.1.4.3 Verify rod drop time of each rod, from the fully withdrawn position, is $\leq 2.7$ seconds from the beginning of decay of stationary gripper coil voltage to dashpot entry, with:  a. $T_{avg} \geq 541^{\circ}\text{F}$ ; and  b. All reactor coolant pumps operating.	Prior to reactor criticality after each removal of the reactor head

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

LCO 3.1.5            Each shutdown bank shall be within insertion limits specified in the COLR.  
 -----NOTE-----  
 Not applicable to shutdown banks inserted while performing SR 3.1.4.2.  
 -----

APPLICABILITY:    MODE 1,  
                           MODE 2 with any control bank not fully inserted.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One shutdown bank inserted $\leq$ 16 steps beyond the insertion limits specified in the COLR.	A.1.    Verify all control banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1    Verify SDM is within the limits specified in the COLR	1 hour
	<u>OR</u>	
	A.2.2    Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3        Restore the shutdown banks to within the insertion limits specified in the COLR.	24 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more shutdown banks not within limits for reasons other than Condition A.	B.1.1    Verify SDM to be within the limits provided in the COLR.	1 hour
	<u>OR</u>	
	B.1.2    Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	B.2       Restore shutdown banks to within limits	2 hours
C. Required Action and associated Completion Time not met.	C.1       Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1    Verify each shutdown bank is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

LCO 3.1.6 Control banks shall be within the insertion, sequence, and overlap limits specified in the COLR.

-----NOTE-----  
Not applicable to control banks inserted while performing SR 3.1.4.2.  
-----

APPLICABILITY: MODE 1,  
MODE 2 with  $k_{eff} \geq 1.0$ .

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control bank A, B, or C inserted $\leq 16$ steps beyond the insertion, sequence, or overlap limits specified in the COLR.	A.1.1 Verify all shutdown banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3 Restore the control bank to within the insertion, sequence, and limits specified in the COLR.	24 hours

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. Control bank insertion limits not met for reasons other than Condition A.</p>	<p>B.1.1 Verify SDM to be within the limits provided in the COLR.</p> <p style="text-align: center;"><u>OR</u></p>	<p>1 hour</p>
	<p>B.1.2 Initiate boration to restore SDM to within limit.</p> <p style="text-align: center;"><u>AND</u></p>	<p>1 hour</p>
	<p>B.2 Restore control bank(s) to within limits</p>	<p>2 hours</p>
<p>C. Control bank sequence or overlap limits not met for reasons other than Condition A.</p>	<p>C.1.1 Verify SDM to be within the limits provided in the COLR.</p> <p style="text-align: center;"><u>OR</u></p>	<p>1 hour</p>
	<p>C.1.2 Initiate boration to restore SDM to within limit.</p> <p style="text-align: center;"><u>AND</u></p>	<p>1 hour</p>
	<p>C.2 Restore control bank sequence and overlap to within limits.</p>	<p>2 hours</p>
<p>D. Required Action and associated Completion Time not met.</p>	<p>D.1 Be in MODE 3.</p>	<p>6 hours</p>



SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify estimated critical control bank position is within the limits specified in the COLR.	Within 4 hours prior to achieving criticality
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	In accordance with the Surveillance Frequency Control Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each inoperable DRPI and each demand position indicator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DRPI per group inoperable in one or more groups.	A.1 Verify the position of the rod with inoperable DRPI indirectly by using movable incore detectors.	Once per 8 hours
	<u>OR</u> A.2.1 Verify the position of the rod with inoperable DRPI indirectly by using movable incore detectors.	8 hours <u>AND</u> Once per 31 EFPD thereafter <u>AND</u> 8 hours after discovery of each unintended rod movement <u>AND</u>
	<u>AND</u>	(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.2.2 Restore inoperable DRPI to OPERABLE status.</p> <p><u>OR</u></p> <p>A.3 Reduce THERMAL POWER to <math>\leq</math> 50% RTP</p>	<p>8 hours after each movement of rod with inoperable DRPI &gt; 12 steps</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>8 hours after reaching RTP</p> <p>Prior to entering MODE 2 from MODE 3</p> <p>8 hours</p>
<p>B. More than one DRPI group inoperable in one or more groups.</p>	<p>B.1 Place the control rods under manual control.</p> <p><u>AND</u></p> <p>B.2 Restore the inoperable DRPIs to OPERABLE status such that a maximum of one DRPI per group is inoperable.</p>	<p>Immediately</p> <p>24 hours</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One or more DRPI inoperable in one or more groups and associated rod has been moved <math>\geq 24</math> steps in one direction since the last determination of the rod's position.</p>	<p>C.1.1 Initiate action to verify the position of the rods with inoperable DRPIs indirectly by using movable incore detectors.</p> <p style="text-align: center;"><u>AND</u></p> <p>C.1.2 Complete rod position verification started in Required Action C.1.1.</p> <p style="text-align: center;"><u>OR</u></p> <p>C.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>	<p>Immediately</p> <p>8 hours</p> <p>8 hours</p>
<p>D. One or more demand position indicators per bank inoperable in one or more banks.</p>	<p>D.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE.</p> <p style="text-align: center;"><u>AND</u></p> <p>D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are <math>\leq 12</math> steps apart.</p> <p style="text-align: center;"><u>OR</u></p> <p>D.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>	<p>Once per 8 hours</p> <p>Once per 8 hours</p> <p>8 hours</p>
<p>E. Required Action and associated Completion Time not met.</p>	<p>E.1 Be in MODE 3.</p>	<p>6 hours</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.1.7.1</p> <p>-----NOTE-----                      Not required to be met for DRPIs associated with rods that do not meet LCO 3.1.4.                      -----</p> <p>Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.</p>	<p>Once prior to criticality after each removal of the reactor head.</p>



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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. 193  
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 November 21, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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.

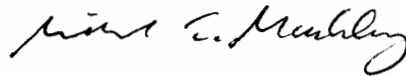
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-68 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 193, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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: October 2, 2017



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. 176  
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 November 21, 2016, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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.



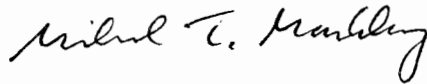
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-81 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 176, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 90 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NOS. 193 AND 176

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

3.1.4-2  
3.1.4-3  
3.1.5-1  
3.1.5-2  
3.1.6-1  
3.1.6-2  
3.1.6-3  
3.1.7-1  
3.1.7-2  
3.1.7-3

Insert Pages

License

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

TSs

3.1.4-2  
3.1.4-3  
3.1.5-1  
3.1.5-2  
3.1.6-1  
3.1.6-2  
3.1.6-3  
3.1.7-1  
3.1.7-2  
3.1.7-3  
3.1.7-4

(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. 193, 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. 176 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.1.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	B.2 Reduce THERMAL POWER to $\leq 75\%$ RTP.	2 hours
	<u>AND</u>	
	B.3 Verify SDM is $\geq$ the limit specified in the COLR.	Once per 12 hours
	<u>AND</u>	
	B.4 Perform SR 3.2.1.1, SR 3.2.1.2, and SR 3.2.2.1.	72 hours
	<u>AND</u>	
	B.5 Reevaluate safety analyses and confirm results remain valid for duration of operation under these conditions.	5 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3	6 hours
D. More than one rod not within alignment limit.	D.1.1 Verify SDM is $\geq$ the limit specified in the COLR.	1 hour
	<u>OR</u>	
	D.1.2 Initiate boration to restore required SDM to within limit.	1 hour
	<u>AND</u>	
	D.2 Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.4.1 -----NOTE----- Not required to be performed for rods associated with inoperable rod position indicator or demand position indicator. ----- Verify position of individual rods within alignment limit.	In accordance with the Surveillance Frequency Control Program

(continued)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Shutdown Bank Insertion Limits

LCO 3.1.5 Each shutdown bank shall be within insertion limits specified in the COLR.

-----NOTE-----  
Not applicable to shutdown banks inserted while performing SR 3.1.4.2.  
-----

APPLICABILITY: MODES 1 and 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One shutdown bank inserted $\leq$ 16 steps beyond the insertion limits specified in the COLR.	A.1 Verify all control banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3 Restore the shutdown banks to within the insertion limits specified in the COLR.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or more shutdown banks not within limits for reasons other than Condition A.	B.1.1     Verify SDM is $\geq$ the limit specified in the COLR.	1 hour
	<u>OR</u>	
	B.1.2     Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	B.2        Restore shutdown banks to within limits.	2 hours
C. Required Action and associated Completion Time not met.	C.1        Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.5.1     Verify each shutdown bank is within the insertion limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program



3.1 REACTIVITY CONTROL SYSTEMS

3.1.6 Control Bank Insertion Limits

LCO 3.1.6 Control banks shall be within the insertion, sequence, and overlap limits specified in the COLR.

-----NOTE-----  
Not applicable to control banks inserted while performing SR 3.1.4.2.  
-----

APPLICABILITY: MODE 1,  
MODE 2 with  $k_{eff} \geq 1.0$ .

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Control bank A, B, or C inserted $\leq 16$ steps beyond the insertion, sequence, or overlap limits specified in the COLR.	A.1.1 Verify all shutdown banks are within the insertion limits specified in the COLR.	1 hour
	<u>AND</u>	
	A.2.1 Verify SDM is within the limits specified in the COLR.	1 hour
	<u>OR</u>	
	A.2.2 Initiate boration to restore SDM to within limit.	1 hour
	<u>AND</u>	
	A.3 Restore the control bank to within the insertion, sequence, and limits specified in the COLR.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Control bank insertion limits not met for reasons other than Condition A.	B.1.1 Verify SDM is $\geq$ the limit specified in the COLR.  <u>OR</u> B.1.2 Initiate boration to restore SDM to within limit.  <u>AND</u> B.2 Restore control bank(s) to within limits.	1 hour  1 hour  2 hours
C. Control bank sequence or overlap limits not met for reasons other than Condition A.	C.1.1 Verify SDM is $\geq$ the limit specified in the COLR.  <u>OR</u> C.1.2 Initiate boration to restore SDM to within limit.  <u>AND</u> C.2 Restore control bank sequence and overlap to within limits.	1 hour  1 hour  2 hours
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.1.6.1	Verify estimated critical control bank position is within the limits specified in the COLR.	Within 4 hours prior to achieving criticality
SR 3.1.6.2	Verify each control bank insertion is within the limits specified in the COLR.	In accordance with the Surveillance Frequency Control Program
SR 3.1.6.3	Verify sequence and overlap limits specified in the COLR are met for control banks not fully withdrawn from the core.	In accordance with the Surveillance Frequency Control Program

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

LCO 3.1.7 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each inoperable DRPI and each inoperable demand position indicator.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One DRPI per group inoperable in one or more groups.</p>	<p>A.1 Verify the position of the rod with inoperable DRPI indirectly by using movable incore detectors.</p>	<p>Once per 8 hours</p>
	<p><u>OR</u></p> <p>A.2.1 Verify the position of the rod with inoperable DRPI indirectly by using movable incore detectors.</p> <p><u>AND</u></p>	<p>8 hours</p> <p><u>AND</u></p> <p>Once per 31 EFPD thereafter</p> <p><u>AND</u></p> <p>8 hours after discovery of each unintended rod movement</p> <p><u>AND</u></p> <p>(continued)</p>

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. (continued)</p>	<p>A.2.2 Restore inoperable DRPI to OPERABLE status.</p> <p><u>OR</u></p> <p>A.3 Reduce THERMAL POWER to ≤ 50% RTP.</p>	<p>8 hours after each movement of rod with inoperable DRPI &gt; 12 steps</p> <p><u>AND</u></p> <p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>8 hours after reaching RTP</p> <p>Prior to entering MODE 2 from MODE 3</p> <p>8 hours</p>
<p>B. More than one DRPI per group inoperable in one or more groups.</p>	<p>B.1 Place the control rods under manual control.</p> <p><u>AND</u></p> <p>B.2 Restore inoperable DRPIs to OPERABLE status such that a maximum of one DRPI per group is inoperable.</p>	<p>Immediately</p> <p>24 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. One or more DRPI inoperable in one or more groups and associated rod has been moved <math>\geq 24</math> steps in one direction since the last determination of the rod's position.</p>	<p>C.1 Verify the position of the rods with inoperable DRPIs by using movable incore detectors.</p> <p><u>OR</u></p> <p>C.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>	<p>8 hours</p> <p>8 hours</p>
<p>D. One or more demand position indicators per bank inoperable in one or more banks.</p>	<p>D.1.1 Verify by administrative means all DRPIs for the affected banks are OPERABLE.</p> <p><u>AND</u></p> <p>D.1.2 Verify the most withdrawn rod and the least withdrawn rod of the affected banks are <math>\leq 12</math> steps apart.</p> <p><u>OR</u></p> <p>D.2 Reduce THERMAL POWER to <math>\leq 50\%</math> RTP.</p>	<p>Once per 8 hours</p> <p>Once per 8 hours</p> <p>8 hours</p>
<p>E. Required Action and associated Completion Time not met.</p>	<p>E.1 Be in MODE 3.</p>	<p>6 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.1.7.1</p> <p>-----NOTE----- Not required to be met for DRPIs associated with rods that do not meet LCO 3.1.4. -----</p> <p>Verify each DRPI agrees within 12 steps of the group demand position for the full indicated range of rod travel.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

TRAVELER TSTF-547, REVISION 1, "CLARIFICATION OF ROD POSITION REQUIREMENTS"

FOR

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

AMENDMENT NO. 214 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-2

AMENDMENT NO. 211 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-8

AND

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

AMENDMENT NO. 193 TO RENEWED FACILITY OPERATING LICENSE NO. NPF-68

AMENDMENT NO. 176 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 November 21, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16326A256), Southern Nuclear Operating Company (SNC, the licensee) requested changes to the technical specifications (TSs) in the Renewed Facility Operating Licenses for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, and Vogtle Electric Generating Plant (VEGP), Units 1 and 2.

The changes revise the Technical Specifications (TS) to provide time to correct rod movement failures that do not affect operability, and provide an alternative to frequent verification of rod position using the movable incore detectors. The changes align requirements of TS 3.1.4, "Rod Group Alignment Limits," and TS 3.1.7, "Rod Position Indication," eliminate an unnecessary Required Action (RA) from TS 3.1.7, and make some editorial improvements to TSs 3.1.4, 3.1.5, "Shutdown Bank Insertion Limits," 3.1.6, "Control Bank Insertion Limits," and 3.1.7. The changes are in accordance with Nuclear Regulatory Commission (NRC) approved Technical Specification Task Force Traveler (TSTF)-547, Revision 1, "Clarification of Rod Position Requirements" dated March 4, 2016 (ADAMS Accession Package No. ML16012A126). Variations are editorial in nature and discussed in this safety evaluation (SE).



## 2.0 REGULATORY EVALUATION

### 2.1 Description of Rod Cluster Control Assemblies

The rod cluster control assemblies (RCCA), or rods, are moved by their control rod drive mechanisms (CRDM). Each CRDM moves its RCCA one step (approximately 5/8 inch) at a time, but at varying rates (steps per minute) depending on the signal output from the Rod Control System. The RCCAs are divided among control banks and shutdown banks. Each bank may be further subdivided into two groups to provide for precise reactivity control. A group consists of two or more RCCAs that are electrically paralleled to step simultaneously. If a bank of RCCAs consists of two groups, the groups are moved in a staggered fashion, but always within one step of each other. All units have four control banks and at least two shutdown banks.

The shutdown banks are maintained either in the fully inserted or fully withdrawn position. The control banks are moved in an overlap pattern, using the following withdrawal sequence: when control bank A reaches a predetermined height in the core, control bank B begins to move out with control bank A. Control bank A stops at the position of maximum withdrawal, and control bank B continues to move out. When control bank B reaches a predetermined height, control bank C begins to move out with control bank B. This sequence continues until control banks A, B, and C are at the fully withdrawn position, and control bank D is approximately halfway withdrawn. The insertion sequence is the opposite of the withdrawal sequence. The control rods are arranged in a radially symmetric pattern, so that control bank motion does not introduce radial asymmetries in the core power distributions.

The control banks are used for precise reactivity control of the reactor. The positions of the control banks are normally automatically controlled by the Rod Control System, but they can also be manually controlled. They are capable of adding negative reactivity very quickly (compared to borating). The control banks must be maintained above designed insertion limits and are typically near the fully withdrawn position during normal full power operations.

The axial position of shutdown rods and control rods is indicated by two separate and independent systems, which are the Bank Demand Position Indication System (commonly called group step counters) and the Rod Position Indication (RPI) System. The Bank Demand Position Indication System counts the pulses from the rod control system that moves the rods. There is one step counter for each group of rods. Individual rods in a group all receive the same signal to move and should, therefore, all be at the same position indicated by the group step counter for that group. The Bank Demand Position Indication System is considered relatively precise ( $\pm 1$  step or  $\pm 5/8$  inch). If a rod does not move one step for each demand pulse, the step counter will still count the pulse but incorrectly reflect the position of the rod. However, the RPI System provides a more accurate indication of actual rod position, but at a lower precision than the step counters. This system is based on inductive analog signals from a series of coils spaced along a hollow tube. To increase the reliability of the system, the inductive coils are connected alternately to data system A or B. Thus, if one data system fails, the RPI will indicate rod position with half accuracy. The RPI System is capable of monitoring rod position within at least  $\pm 12$  steps with either full accuracy or half accuracy. Depending on the plant design, the RPI system may be analog or digital. The digital system is called the Digital Rod Position Indication (DRPI) system. Both Farley and Vogtle have a DRPI system.

The shutdown margin (SDM) is defined in NUREG-1431 as the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming:

- a. All 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 RCCA 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
- b. In Power Operation and Startup, the fuel and moderator temperatures are changed to the nominal zero power design level.

The Core Operating Limits Report (COLR) is defined in NUREG-1431 as the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific parameter limits must be determined for each reload cycle in accordance with TS 5.6.5. Plant operation within these limits is addressed in individual TS.

## 2.2 Description of Changes

This SE addresses changes to the TS governing rod group alignment limits (TS 3.1.4), shutdown bank insertion limits (TS 3.1.5), control bank insertion limits (TS 3.1.6), and rod position indication instrumentation (TS 3.1.7). The specific changes are described in the following subsections. The discussion is applicable to both Farley and Vogtle, unless otherwise stated in the discussion.

### 2.2.1 Provide Time to Correct Rod Movement Failures that Do Not Affect Operability

The FNP limiting condition for operation (LCO) 3.1.5 requires that "Each shutdown bank shall be within insertion limits specified in the COLR." Current Condition A for "One or more shutdown banks not within the limits," requires:

- A.1.1 Verify SDM to be within the limits provided in the COLR within 1 hour.

OR

- A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

- A.2 Restore shutdown banks to within limits within 2 hours.

The VEGP LCO 3.1.5 requires that "Each shutdown bank shall be within insertion limits specified in the COLR." Current Condition A for "One or more shutdown banks not within the limits," requires:

- A.1.1 Verify SDM is  $\geq$  the limit specified in the COLR within 1 hour.

OR

- A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

- A.2 Restore shutdown banks to within limits within 2 hours.

The FNP LCO 3.1.6 requires that each "Control banks shall be within insertion, sequence and overlap limits specified in the COLR." Current Condition A for "Control bank insertion limits not met" requires:

A.1.1 Verify SDM to be within the limits provided in the COLR within 1 hour.

OR

A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

A.2 Restore control bank(s) to within limits within 2 hours.

The VEGP LCO 3.1.6 requires that "Control banks shall be within the insertion, sequence and overlap limits specified in the COLR." Current Condition A for "Control bank insertion limits not met," requires:

A.1.1 Verify SDM is  $\geq$  the limit specified in the COLR within 1 hour.

OR

A.1.2 Initiate boration to restore SDM to within limit within 1 hour.

AND

A.2 Restore control bank(s) to within limits within 2 hours.

The proposed change would add a new Condition A to LCO 3.1.5 that would require, with "One shutdown bank inserted  $\leq$  16 steps beyond the insertion limits specified in the COLR,"

A.1 Verify all control banks are within the insertion limits specified in the COLR within 1 hour.

AND

A.2.1 Verify SDM is within the limits specified in the COLR within 1 hour.

OR

A.2.2. Initiate boration to restore SDM to within limit within 1 hour.

AND

A.3 Restore the shutdown banks to within the insertion limits specified in the COLR within 24 hours.

The existing Condition A would be renumbered as Condition B and would be modified to apply for "One or more shutdown banks not within limits for reasons other than Condition A." The existing RAs A.1.1, A.1.2, and A.2 would be renumbered B.1.1, B.1.2, and B.2. The existing Condition B and RA B.1 would be renumbered Condition C and RA C.1.

The proposed change would add a new Condition A to LCO 3.1.6 that would require, if “Control bank A, B, or C is inserted  $\leq$  16 steps beyond the insertion, sequence, or overlap limits specified in the COLR,”

- A.1 Verify all shutdown banks are within the insertion limits specified in the COLR within 1 hour.

AND

- A.2.1 Verify SDM is within the limits specified in the COLR within 1 hour.

OR

- A.2.2. Initiate boration to restore SDM to within the limit within 1 hour.

AND

- A.3 Restore the control bank to within the insertion, sequence, and limits specified in the COLR within 24 hours.

The existing Condition A would be renumbered as Condition B and would be modified to apply for “Control bank insertion limits not met for reasons other than Condition A.” The existing RAs A.1.1, A.1.2, and A.2 would be renumbered B.1.1, B.1.2, and B.2.

The existing Condition B would be modified to apply when control bank sequence or overlap limits are not met for reasons other than Condition A. Existing Condition B and RAs B.1.1, B.1.2, and B.2 would be renumbered as Condition C and RAs C.1.1, C.1.2, and C.2. Existing Condition C and RA C.1 would be renumbered as Condition D and RA D.1.

The shutdown banks must be within their insertion limits any time the reactor is critical or approaching criticality. This ensures that a sufficient amount of negative reactivity is available to shut down the reactor and maintain the required SDM following a reactor trip.

The limits on control banks sequence, overlap, and physical insertion, as defined in the COLR, must be maintained because they serve the function of preserving power distribution, ensuring that the SDM is maintained, ensuring that ejected rod worth is maintained, and ensuring adequate negative reactivity insertion is available on trip.

- 2.2.2 Provide an Alternative to Frequent Verification of Rod Position Using the Movable Incore Detectors

LCO 3.1.7, “Rod Position Indication,” requires that the DRPI and the Demand Position Indication System shall be OPERABLE in Modes 1 and 2. Condition A applies for “One DRPI per group inoperable for one or more groups” of rods. The associated RAs are:

- A.1 Verify the position of the rods with inoperable DRPIs (FNP only) or position indicators (VEGP only) indirectly by using the movable incore detectors once per 8 hours.

OR

- A.2 Reduce THERMAL POWER to  $\leq$  50 percent RTP [rated thermal power] within 8 hours.

The proposed change would add two new RAs (RA A.2.1 and RA A.2.2) to Condition A as alternatives to the once-per-8-hour indirect determination of rod position. The revised RAs would be:

- A.1 Verify the position of the rods with inoperable DRPI indirectly by using the moveable incore detectors once per 8 hours.

OR

- A.2.1 Verify the position of rod with inoperable DRPI indirectly by using moveable incore detectors within 8 hours, AND once per 31 EFPD [days of full power operation] thereafter, AND within 8 hours after discovery of each unintended rod movement, AND within 8 hours after each movement of rods with inoperable DRPI > 12 steps, AND prior to THERMAL POWER exceeding 50 percent RTP (rated thermal power), AND within 8 hours after reaching RTP.

AND

- A.2.2 Restore inoperable DRPI to OPERABLE status prior to entering MODE 2 [Startup] from MODE 3 [Hot Standby].

OR

- A.3 Reduce THERMAL POWER to  $\leq$  50 percent RTP within 8 hours.

LCO 3.1.4 requires that "All shutdown and control rods shall be OPERABLE, with all individual indicated rod positions within 12 steps of their group step counter demand position." The 12-step agreement limit between the Bank Demand Position Indication System and the DRPI System indicates that the Bank Demand Position Indication System is adequately calibrated, and can be used for indication of the measurement of control rod bank position. When one DRPI channel per group fails, the position of the rod may still be determined indirectly by use of the movable incore detectors.

Current Surveillance Requirement (SR) 3.1.4.1 requires "Verify individual rods positions within alignment limit" in accordance with the Surveillance Frequency Control Program. This SR is proposed to be modified by the following Note "Not required to be performed for rods associated with inoperable rod position indicator or demand position indicator" meaning that the SR is not applicable for rods with an inoperable DRPI.

Verification that individual rod positions are within alignment limits at the Frequency specified in the Surveillance Frequency Control Program provides a history that allows the operator to detect a rod that is beginning to deviate from its expected position. The specified Frequency takes into account other rod position information that is continuously available to the operator in the control room, so that during actual rod motion, deviations can immediately be detected.

### 2.2.3 Allow Time for Thermal Equilibrium of Analog RPI

This section of TSTF-547 and corresponding section of the model SE is not applicable to plants with DRPI systems. Both FNP and VEGP have DRPI systems. This does not impact the evaluation of the other TS changes described in this SE.

#### 2.2.4 Clarify SRs in TS 3.1.4 and TS 3.1.7

LCO 3.1.4 specifies that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position.

SR 3.1.4.1 requires verifying the position of individual rods are within the alignment limits with a frequency in accordance with the Surveillance Frequency Control Program. The proposed change is the addition of a Note to SR 3.1.4.1 stating that the SR is not required to be performed for rods associated with an inoperable rod position indicator or demand position indicator. This Note is being added because SR 3.1.4.1 cannot be performed for rods with an inoperable rod position indicator or demand position indicator.

SR 3.1.7.1 requires verification that each DRPI agrees within the required steps of the group demand position for the [full indicated range] of rod travel. The proposed change is the addition of a Note to SR 3.1.7.1 stating that the SR would not be required to be met for rods known not to meet LCO 3.1.4.

#### 2.2.5 Eliminate an Unnecessary RA from TS 3.1.7

LCO 3.1.7, "Rod Position Indication," requires that the DRPI and the Demand Position Indication System be operable during Mode 2, Startup, and Mode 1, Power Operation. Condition B is applicable when more than one DRPI per group is inoperable. Existing RA B.2 states, "Monitor and Record Reactor Coolant System Tavg."

RA B.2 is proposed to be deleted.

The existing RA B.3 is also being deleted as described below in Section 2.2.6, Item 5. Existing RA B.4 is being renumbered as B.2.

#### 2.2.6 Other Proposed Changes

The proposed changes described in this section are editorial and do not change the technical content.

1. LCO 3.1.4, Condition B, is revised to eliminate RA B.1 (FNP only) and to combine RAs B.2.4 and B.2.5. Condition B applies when one rod is not within the alignment limits and RA B.1 requires restoring the rod to within limits within 1 hour. An alternative set of RAs is provided in the RA section, and will continue to be required when Condition B is applicable. RA B.1 is an Action that requires restoration of equipment such that the Condition does not apply. Restoring equipment to operable status is understood to be an option. Therefore, stating this as an RA is not necessary.

Combining RAs B.2.4 and B.2.5 is editorial and has no technical implications.

2. LCO 3.1.5 and LCO 3.1.6 contain a note modifying their Applicability that states "This LCO is not applicable while performing SR 3.1.4.2." The proposed change moves the LCO 3.1.5 and LCO 3.1.6 Applicability Notes to LCO Notes and revises the Notes to state, "Not applicable to shutdown banks inserted while performing SR 3.1.4.2" for LCO 3.1.5 and "Not applicable to control banks inserted while performing SR 3.1.4.2" for LCO 3.1.6. This change clarifies the note and does not alter its meaning.

3. TS 3.1.7 is revised to consistently use the defined abbreviation “DRPI.” This affects the Actions Note, RA A.1 (Vogtle only), and RA B.2.
4. TS 3.1.7, Condition A, is revised from “for one or more groups” to the more standard terminology “in one or more groups,” and TS 3.1.7, Condition B is revised to include the phrase “in one or more groups” to be more consistent with the wording of Condition A.
5. TS 3.1.7, RA B.3 is redundant to RA A.1. RA B.3 is proposed to be deleted. Condition A applies when one DRPI per group is inoperable and Condition B applies when more than one DRPI per group is inoperable. Each entry into Condition B also requires entry into Condition A. Restating the RA is not necessary.
6. TS 3.1.7, Condition C is revised to contain similar terminology to Conditions A and B. The existing Condition C states, “One or more rods with inoperable DRPIs have been moved in excess of 24 steps (FNP only) or  $\geq 24$  steps (VEGP only) in one direction since the last determination of the rod’s position.” Conditions A and B are worded such that the condition describing the inoperable equipment (e.g., “One DRPI per group inoperable...”) is listed first. The proposed change rewords Condition C to state, “One or more DRPI inoperable in one or more groups and associated rod has moved  $\geq 24$  steps in one direction since the last determination of the rod’s position.”
7. LCO 3.1.7, Condition D is revised from “One demand position indicator per bank inoperable for one or more banks” to “One or more demand position indicators per bank inoperable in one or more banks.” The proposed change makes the terminology consistent with the Note modifying the RAs.

The current TS 3.1.7 is modified by a Note which states, “Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator.” The Bases for the Note states that the Note is acceptable because the RAs for each condition provide appropriate compensatory actions for each inoperable indicator.

There is one demand position indicator per group of rods. For banks with two groups of rods, there are two demand indicators per bank. The separate condition entry Note modifying the TS 3.1.7 Actions states that separate condition entry is allowed for inoperable demand position indicators which means that the Condition D is applicable to more than one inoperable demand position indicator per bank. The proposed change makes the existing Condition D terminology consistent with the Note.

## 2.2.7 Variations from TSTF-547

The licensee identified several variations from the TS changes contained in TSTF-547:

1. TSTF-547 deletes former TS 3.1.4 Required Action (RA) B.1 “Restore rod to within alignment limits.” Stating this RA is not necessary since restoring equipment to operable status is understood to always be an option. VEGP does not have a corresponding TS 3.1.4 RA B.1, so these changes are not applicable to VEGP.
2. TSTF-547 makes the following editorial change to TS 3.1.7 RA A.1 (with underline added for effect):

Verify the position of the rods with inoperable DRPI position indicators indirectly by using movable incore detectors.

FNP's corresponding RA was consistent with NUREG-1431 Rev. 4, except that it already replaced "position indicators" with "DRPIs". To be consistent with making "rods" singular ("rod"), "DRPIs" is being changed to "DRPI".

3. TSTF-547 contains the following oversight in new RA A.2.1 to TS 3.1.7 (with underline added for effect):

Verify the position of the rods with inoperable DRPI indirectly by using movable incore detectors.

To be consistent with the changes made to RA A.1, "rod" (singular) should have been used instead of "rods" (plural). The VEGP and FNP markups correct this oversight by using "rod" (singular) for this RA.

4. The current VEGP TS 3.1.7 Condition B states "More than one DRPI group inoperable." This should have stated "More than one DRPI per group inoperable." This was an obvious oversight from when VEGP adopted TSTF-234, which was approved by the NRC June 9, 2016. The marked-up pages from VEGP's July 18, 2014 application to adopt TSTF-234 (ML14203A124) correctly stated "per group", consistent with TSTF-234. To clarify the intent of the TSTF-547 modifications to Condition 8, this oversight is being corrected.
5. RA C.1 from the TSTF-547 markup for TS 3.1.7 (with insert shown underline) states "Verify the position of the rods with inoperable DRPIs position indicators indirectly by using movable incore detectors." with a Completion Time (CT) of [4] hours. FNP's corresponding RA is split into two RAs. FNP's RA C.1.1 states to "Initiate action to verify the position of the rods with inoperable DRPI indirectly by using movable incore detectors." with a CT of "Immediately", and RA C.1.2 states to "Complete rod position verification started in Required Action C.1.1." with a CT of 8 hours. While FNP has the additional requirement to begin this step "Immediately", the net RA is the same between the TSTF-547 markups and FNP.

### 2.3 Regulatory Review

The categories of items required to be in the TSs are provided in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met. The regulation at 10 CFR 50.36(c)(3) requires TSs to include items in the category of SRs, which are 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 LCOs will be met. Also, 10 CFR 50.36(a)(1) states that a summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the TSs.

The U.S. Nuclear Regulatory Commission (NRC) staff's guidance for review of TSs is in Chapter 16, *Technical Specifications*, of NUREG-0800, Revision 3, *Standard Review Plan* (March 2010) (ADAMS Accession No. ML100351425). As described therein, as part of the regulatory



standardization effort, the NRC staff has prepared Standard Technical Specifications (STSs) for each of the light-water reactor nuclear designs. NUREG-1431 contains the STS for Westinghouse-designed plants.

### 3.0 TECHNICAL EVALUATION

During the review of STS Change Traveler TSTF-547, the NRC staff reviewed the proposed changes to NUREG-1431 and the technical justification for the changes provided in Traveler TSTF-547. The NRC staff reviewed the technical justification for the proposed changes to ensure the reasoning was logical, complete and clearly written as described in Chapter 16 of NUREG-0800. The NRC staff reviewed the proposed changes for continued compliance with the requirements of 10 CFR 50.36 and for consistency with conventional terminology and with the format and usage rules embodied in the STS. The NRC staff considered whether there should be any limitations or conditions placed on adoption of the Traveler by future applicants.

#### 3.1 Provide Time to Correct Rod Movement Failures that Do Not Affect Operability Review

The proposed new Condition A of TSs 3.1.5 and 3.1.6 for shutdown and control bank insertion limits would allow 24 hours to restore a single bank to be within its insertion limit when inserted below the insertion limit. With one shutdown or control bank inserted a maximum of 16 steps below the rod insertion limit, the RAs associated with new Condition A also require verification that all other control (LCO 3.1.5, Condition A) and shutdown banks (LCO 3.1.6, Condition A) are within the insertion limits; and verification that the reactor can be shutdown using control rods or boration. The CT for these RAs is 1 hour.

The new conditions define limits of both duration and insertion if a bank is immovable due to failures external to the CRDM. A maximum of one control or shutdown bank may be inserted beyond the limits for a maximum of 24 hours provided all other banks are within the insertion limits and that the reactor could be shut down using control rods or boration. The new Condition A imposes a limit on the insertion of 16 steps less than the insertion limit. The value of 16 steps corresponds to the minimum number of steps that the rods must be moved to ensure correct performance of SR 3.1.4.2.

The NRC staff reviewed the justification for the proposed addition of Condition A to TS 3.1.5 and TS 3.1.6 provided in the Technical Evaluation Section of Traveler TSTF-547, to ensure the reasoning is logical, complete and clearly written. The justification in Traveler TSTF-547 states:

1. All control and shutdown rod assemblies are required to be Operable. If a rod is untrippable (i.e., inoperable), then a plant shutdown is required in accordance with LCO 3.1.4, Condition A.
2. Only one control bank and shutdown bank may be inserted beyond insertion limits by no more than 16 steps. If one or more control banks or shutdown banks exceed the insertion limit, a brief time period is permitted to correct the condition and then a plant shutdown is required.
3. If one rod is not within the alignment limits, adequate SDM is verified and a power reduction is required by LCO 3.1.4, Condition B. If more than one rod is not within the alignment limit as defined in LCO 3.1.4, adequate SDM is verified and a plant shutdown is required.

The insertion limits are established to ensure a sufficient amount of negative reactivity can be rapidly inserted to shutdown the reactor. The NRC staff finds that allowing continued full-power operations for 24 hours with a rod movement failure is acceptable for the following reasons:

1. the Shutdown Margin continues to be met;
2. all control and shutdown rods are trippable – i.e., capable of being rapidly inserted into the core;
3. only one bank may exceed insertion limits by no more than a specified number of steps;
4. all immovable rod assemblies are aligned; and
5. the rods must be restored to within the insertion limits within 24 hours.

The change to TS 3.1.5 and TS 3.1.6 to provide time to correct rod movement failures that do not affect operability will allow sufficient time for diagnosis and repairs while maintaining the safety function of the control rods since the affected rods are still trippable. The thermal margins may be affected by power distribution changes due to control rod bank insertion, both during the insertion and during the resulting local xenon transient. However, insertions at or near the typical value of 16 steps from fully withdrawn, as provided in the proposed changes to TSs 3.1.5 and 3.1.6, would result in a very small negative reactivity impact at the top of active fuel. The resulting effect on the axial power distribution is not expected to be significant. In addition, alignment of all rods with the rod bank position (as per LCO 3.1.4) must be maintained and it will be verified that the reactor can still be shutdown. Therefore, the NRC staff has determined that the proposed 24-hour CT for Condition A in LCO 3.1.5 and 3.1.6 specifying shutdown bank and control bank insertion limits is acceptable.

The NRC staff concludes that TS 3.1.5 and TS 3.1.6, as modified by the addition of Condition A, continue to specify the minimum performance level of equipment needed for safe operation of the facility as a LCO; and continue to specify the appropriate remedial measures if the LCO is not met. SRs are not being changed by the addition of Condition A. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met because the minimum performance level of equipment needed for safe operation of the facility is contained in the LCO and the appropriate remedial measures are specified if the LCO is not met.

### 3.2 Provide an Alternative to Frequent Verification of Rod Position Using the Movable Incore Detectors Review

LCO 3.1.7 requires that the DRPI and the Demand Position Indication System be Operable during Power Operation and Startup. When one or more DRPI are inoperable, current TS 3.1.7 requires verification of rod position once per 8 hours using the movable incore detector system or a reduction in thermal power to less than or equal to 50 percent rated thermal power (RTP) within 8 hours. The proposed change provides an alternative set of RAs.

New RA A.2.1 requires use of the movable detector system to monitor the position of the rod within 8 hours of the inoperability of DRPI, 8 hours after discovery of each unintended rod movement, 8 hours after each greater than 12 step movement of a rod with inoperable DRPI, prior to exceeding 50 percent RTP, 8 hours after reaching RTP, and once per 31 effective full power days (EFPD) thereafter. New RA A.2.2 would require the inoperable DRPI to be restored to Operable status prior to entering Startup from Hot Standby.

The implementation of new RAs A.2.1 and A.2.2 would allow use of an alternative monitoring scheme until the next shutdown, after which the DRPI must be restored to an Operable status. The NRC staff finds that the new RAs A.2.1 and A.2.2 and CTs are more appropriate because they require verification of rod position following circumstances in which rod motion could occur. This is more appropriate than current TS 3.1.7 RA A.1, which requires verification of rod position using the movable incore detection system once per 8 hours, regardless of whether the rods have moved or not. Additionally, the new RAs A.2.1 and A.2.2 contain a requirement to restore the DRPI to operable status prior to restart.

If the rod position indication is failed for an individual rod, its position is determined indirectly by use of the movable incore detectors. The NRC staff has determined that this change, which verifies rod position using the movable incore detectors based on the occurrence of events requiring rod motion, rather than determining position on a specified frequency, is acceptable because events requiring rod motion of the shutdown banks and control banks A, B, and C are relatively infrequent during steady state operation. Events involving significant movement of rods in control bank D are also relatively infrequent. The indirect determination of rod position is required after significant changes in power level or following substantial rod motion.

The addition of the Note to SR 3.1.4.1 stating that the SR is not required to be performed for rods associated with an inoperable DRPI or demand position indicator is appropriate because the RAs of TS 3.1.7 for an inoperable DRPI provide the appropriate actions for indirectly determining the position of the affected rods.

The NRC staff concludes that the addition of an alternative monitoring scheme to indirectly determine the position of rods associated with an inoperable DRPI is acceptable. TS 3.1.7, as modified, continues to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO and continues to specify the appropriate remedial measures if the LCO is not met. The revised SR 3.1.4.1, which has been clarified to specify when it is required to be performed, continues to be an appropriate test to ensure that the necessary quality of systems is maintained. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met because the minimum performance level of equipment needed for safe operation of the facility is contained in the LCO and the appropriate remedial measures are specified if the LCO is not met. The NRC staff finds that the requirements of 10 CFR 50.36(c)(3) continue to be met because the revised SR provides the appropriate testing to ensure the necessary quality of components is maintained and that the LCO will be met.

### 3.3 Clarify SRs in TS 3.1.4 and TS 3.1.7 Review

#### 3.3.1 Clarification of SR 3.1.4.1

LCO 3.1.4 requires that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position. SR 3.1.4.1 requires verification of the individual rod positions within the alignment limit periodically. SR 3.1.4.1 cannot be performed for rods with an inoperable bank demand position indicator. Failure to meet an SR is considered a failure to meet an LCO requirement. Therefore, if SR 3.1.4.1 cannot be performed, entry into LCO 3.1.4 Condition D is required. LCO 3.1.4 Condition D applies when more than one rod is not within the alignment limit. The RA associated with Condition D requires, in part, that the reactor be in Mode 3 (Hot Standby) within 6 hours.

LCO 3.1.7 requires the DRPI and bank demand position indication to be operable. LCO 3.1.7 Condition D applies if one demand position indicator per bank is inoperable for one or more banks. The Condition D RAs require verification that all DRPIs for the affected banks are operable and

require verification that the most withdrawn rod and least withdrawn rod of the affected banks are less than or equal to 12 steps apart once per 8 hours. Alternatively, thermal power must be reduced to less than or equal to 50 percent RTP.

A Note is being added to SR 3.1.4.1 stating that this SR is not required to be performed for rods associated with an inoperable demand position indicator or DRPI. The alignment limit is based on the demand position indicator. If the bank demand position indicator is inoperable, the SR cannot be performed.

Following modification of SR 3.1.4.1, Condition D of LCO 3.1.7 would be the applicable Condition to be entered in the event of inoperable demand position indicators. The RAs associated with Condition D of LCO 3.1.7 provide the appropriate actions in this situation by requiring that the DRPIs are operable and that the individual rods in the bank are not misaligned by more than 12 steps.

### 3.3.2 Clarification of SR 3.1.7.1

LCO 3.1.4 requires that all shutdown and control rods shall be operable and individual indicated rod positions shall be within 12 steps of their group step counter demand position.

LCO 3.1.7 requires the DRPI and bank demand position indication to be operable.

SR 3.1.7.1 requires verification that each DRPI agree within 12 steps of the group demand position for the [full indicated range] of rod travel. This SR is performed once prior to criticality after each removal of the reactor head. Failure to meet an SR is considered a failure to meet the LCO per SR 3.0.1. The requirements of SRs must be satisfied in between performances of the surveillance test itself. If a control or shutdown rod is not within 12 steps of its bank demand position indication, then the requirements of both LCO 3.1.4 and LCO 3.1.7 are not met.

A Note is being added to SR 3.1.7.1 stating that this SR is not required to be performed for rods that are known not to meet LCO 3.1.4. If a rod is known not to be within 12 steps of the group demand position, LCO 3.1.4 provides the appropriate RAs. With one rod not within the alignment limit, LCO 3.1.4 Condition B requires verification of shutdown margin or boration until SDM is met; a reduction in RTP, periodic re-verification of shutdown margin, verification that heat flux and nuclear enthalpy rise hot channel factors are within limits, and safety analyses must be re-evaluated to confirm results remain valid for duration of operation under these conditions. If more than one rod is not within the alignment limit, the SDM must be determined by verifying that the shutdown margin is within limits or by initiating boration to restore required SDM and plant shutdown is required.

### 3.3.3 Evaluation of SR 3.1.4.1 and SR 3.1.7.1 Changes

The NRC staff reviewed the technical justification for the proposed changes provided in the Traveler TSTF-547 for logical reasoning, completeness and clarity. The purpose of the changes is to prescribe the appropriate Actions to be followed when equipment is inoperable.

TS 3.1.4 provides limits on rod alignment to ensure acceptable power peaking factors and local linear heat rates and an acceptable shutdown margin, all of which are initial conditions in the applicable safety analyses. It is appropriate to consolidate requirements associated with rod misalignments in this TS. TS 3.1.7 provides requirements for instrumentation to monitor rod position. The instrumentation is used to verify that the rod alignment limits in TS 3.1.4 are

satisfied. Similarly, it is appropriate to consolidate requirements associated with instrumentation operability in this TS.

The NRC staff concludes that the clarifications to SRs 3.1.4.1 and 3.1.7.1 to specify configurations in which performance of the SRs is not required are appropriate. The TSs, as modified, continue to specify the minimum performance level of equipment needed for safe operation of the facility as an LCO, and continue to specify the appropriate remedial measures if the LCO is not met. The revised SRs 3.1.4.1 and 3.1.7.1 continue to be appropriate, because they ensure the necessary quality of systems is maintained. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) and 10 CFR 50.36(c)(3) continue to be met.

### 3.4 Eliminate an Unnecessary RA from LCO 3.1.7 Review

The NRC staff reviewed the justification for deletion of LCO 3.1.7, RA B.2 that monitors and records reactor coolant average temperature ( $T_{avg}$ ). RA B.2 is one of the RAs associated with LCO 3.17 Condition B. Condition B applies when more than one DRPI per group is inoperable in one or more groups. RA B.1 requires that the control rods be placed in manual control immediately and existing RA B.4 (renumbered as B.2) requires restoring the inoperable position indicators to operable status such that a maximum of one DRPI per group is inoperable within 24 hours.

The NRC staff has determined that RA B.2 provides no safety benefit for identifying trends in reactor coolant  $T_{avg}$ . This RA was intended to help assure that significant changes in power distribution and shutdown margin are avoided. During normal steady state power operation, there is very little rod motion. LCO 3.1.7 RA B.1 and RA B.4 (renumbered as RA B.2) continue to apply when more than one DRPI per group is inoperable. LCO 3.1.4 and LCO 3.1.7 provide the appropriate requirements for monitoring rod position and alignment and provide the appropriate actions, if a rod is misaligned. This provides the necessary verification that SDM is maintained. The nuclear instrumentation monitors neutron flux in the core providing indication of changes in power distribution. Therefore, the NRC staff concludes that RA B.2 of LCO 3.1.7 is unnecessary and can be deleted.

The NRC staff concludes that the proposed changes to LCO 3.1.7 are acceptable because the LCO continues to specify the minimum performance level of equipment needed for safe operation of the facility. As described in the preceding paragraph the appropriate remedial measures are prescribed when the LCO is not met. SRs are not being changed by the deletion of RA B.2. The NRC staff finds that the requirements of 10 CFR 50.36(c)(2) continue to be met.

### 3.5 Other Proposed Changes

The NRC staff found that the following changes are editorial in nature and do not change the TS requirements, and are therefore acceptable.

1. LCO 3.1.4, Condition B, is revised to eliminate RA B.1 (FNP only) and to combine RAs B.2.4 and B.2.5. Condition B applies when one rod is not within the alignment limits and RA B.1 requires restoring the rod to within limits within 1 hour. An alternative set of RAs is provided in the RA section, and will continue to be required when Condition B is applicable. RA B.1 is an Action that requires restoration of equipment such that the Condition does not apply. Restoring equipment to operable status is understood to be an option. Therefore, stating this as an RA is not necessary.

The current VEGP LCO 3.1.4 Condition B does not contain a requirement to restore the rod to within the limits within one hour, so this portion of the editorial changes is not applicable to VEGP.

2. LCO 3.1.5 and LCO 3.1.6 contain a note modifying their Applicability that states “This LCO is not applicable while performing SR 3.1.4.2.” The proposed change moves the LCO 3.1.5 and LCO 3.1.6 Applicability Notes to LCO Notes and revises the Notes to state, “Not applicable to shutdown banks inserted while performing SR 3.1.4.2” for LCO 3.1.5 and “Not applicable to control banks inserted while performing SR 3.1.4.2” for LCO 3.1.6. This change clarifies the note and does not alter its meaning.
3. TS 3.1.7 is revised to consistently use the defined abbreviation “DRPI.” This affects the Actions Note, RA A.1 (Vogtle only), and RA B.2.
4. TS 3.1.7, Condition A, is revised from “for one or more groups” to the more standard terminology “in one or more groups,” and TS 3.1.7, Condition B is revised to include the phrase “in one or more groups” to be more consistent with the wording of Condition A.
5. TS 3.1.7, RA B.3 is redundant to RA A.1. RA B.3 is proposed to be deleted. Condition A applies when one DRPI per group is inoperable and Condition B applies when more than one DRPI per group is inoperable. Each entry into Condition B also requires entry into Condition A. Restating the RA is not necessary.
6. TS 3.1.7, Condition C, is revised to contain similar terminology to Conditions A and B. The existing Condition C states, “One or more rods with inoperable position indicators have been moved > 24 steps in one direction since the last determination of the rod’s position.” Conditions A and B are worded such that the condition describing the inoperable equipment (e.g., “One DRPI per group inoperable...”) is listed first. The proposed change rewords Condition C to state, “One or more DRPI inoperable in one or more groups and associated rods have been moved >24 steps in one direction since the last position determination.”
7. LCO 3.1.7, Condition D, is revised from “One demand position indicator per bank inoperable for one or more banks” to “One or more demand position indicators per bank inoperable in one or more banks.” The proposed change makes the terminology consistent with the Note modifying the RAs.

The current TS 3.1.7 is modified by a Note which states, “Separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator.” The Bases for the Note states that the Note is acceptable because the RAs for each condition provide appropriate compensatory actions for each inoperable indicator.

There is one demand position indicator per group of rods, two demand indicators per bank in those banks with two groups. The separate condition entry Note modifying the TS 3.1.7 Actions states that separate condition entry is allowed for inoperable demand position indicators which means that Condition D is applicable to more than one inoperable demand position indicator per bank. The proposed change makes the existing Condition D terminology consistent with the Note.

The regulation at 10 CFR 50.36(a)(1) states, in part: “A summary statement of the bases or reasons for such specifications ... shall also be included in the application, but shall not become part of the technical specifications.” Accordingly, along with the proposed TS changes, SNC also

submitted TS Bases changes that corresponded to the proposed STS changes for information only.

### 3.6 Variations from TSTF-547

The staff reviewed the variations from the TSTF proposed by the licensee. The staff determined that the variations are editorial in nature and do not impact the applicability or the conclusions presented in the SE of TSTF-547. The changes are therefore acceptable.

### 3.7 Summary of NRC Staff Conclusions

The regulations at 10 CFR 50.36 require that TSs will include items in specified categories, including LCOs and SRs. The proposed changes to FNP and VEGP modify the LCOs, Conditions, RAs, CTs, and SRs applicable to control rod and shutdown rod insertion and alignment limits and the instrumentation to monitor rod position and alignment. The FNP and VEGP TSs continue to specify the LCOs and specify the remedial measures to be taken if one of these requirements is not satisfied. The FNP and VEGP TSs continue to specify the appropriate SRs for tests and inspections to ensure the necessary quality of affected structures, systems and components is maintained. The NRC staff finds that the proposed FNP and VEGP LCOs, and SRs meet the requirements of 10 CFR 50.36(c)(2) and 50.36(c)(3), respectively.

### 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 September 8, 2017. The NRC staff confirmed that neither State official had comments.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. 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 on January 31, 2017 (82 FR 8872). 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: M. Chernoff, NRR/DSS

Date of issuance: October 2, 2017

**SUBJECT:** JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2; VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 – ISSUANCE OF AMENDMENTS REGARDING THE ADOPTION OF TSTF-547, REVISION 1, “CLARIFICATION OF ROD POSITION REQUIREMENTS” (CAC NOS. MF8870, MF8871, MF8872, AND MF8873) DATED OCTOBER 2, 2017

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OFFICE	NRR/DORL/LPL2-1/PM	NRR/DORL/LPL2-1/LA	NRR/DSS/STSB/BC*	NRR/DSS/SRXB/BC
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DATE	9/6/2017	8/25/2017	8/16/2017	9/7/2017
OFFICE	OGC - NLO	NRR/DORL/LPL2-1/BC	NRR/DORL/LPL2-1/PM	
NAME	BHarris	MMarkley	SWilliams	
DATE	9/14/2017	9/28/2017	10/2/2017	

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