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

February 27, 2012

Mr. M. J. Ajluni
Nuclear Licensing Director
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295, Bin - 038
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2, ISSUANCE OF AMENDMENTS REGARDING STEAM GENERATOR WATER LEVEL HIGH-HIGH TECHNICAL SPECIFICATION, TABLE 3.3.1-1 AND TABLE 3.3.2-1 SETPOINT CHANGES (TAC NOS. ME5778 AND ME5779)

Dear Mr. Ajluni:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 165 to Renewed Facility Operating License NPF-68 and Amendment No. 147 to Renewed Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Units 1 and 2, respectively. The amendments consist of changes to the License and Technical Specifications (TSs) in response to your application dated March 3, 2011, as supplemented on August 12, 2011 and December 9, 2011.

The amendments revise TS 3.3.1, "Reactor Protection System Instrumentation" Table 3.3.1-1 and TS 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Table 3.3.2-1.

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,

Patrick G. Boyle, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:
1. Amendment No. 165 to NPF-68
2. Amendment No. 147 to NPF-81
3. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
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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. 165
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 March 3, 2011, as supplemented by letters dated August 12, 2011 and December 9, 2011, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 165, 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

Nancy L. Salgado

Nancy Salgado, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-68
and the Technical Specifications

Date of Issuance: February 27, 2012

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. 147
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 March 3, 2011, as supplemented by letters dated August 12, 2011 and December 9, 2011, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

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

> Technical Specifications and Environmental Protection Plan
>
> The Technical Specifications contained in Appendix A, as revised through Amendment No. 147, 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

Nancy L Salgado

Nancy Salgado, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to License No. NPF-81
and the Technical Specifications

Date of Issuance: February 27, 2012

ATTACHMENT

TO LICENSE AMENDMENT NO. 165

RENEWED FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

AND

TO LICENSE AMENDMENT NO. 147

RENEWED FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 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	Insert Pages
License	License
License No. NPF-68, page 4	License No. NPF-68, page 4
License No. NPF-81, page 3	License No. NPF-81, page 3
TSs	TSs
3.3.1-14	3.3.1-14
3.3.1-15	3.3.1-15
3.3.1-16	3.3.1-16
3.3.1-17	3.3.1-17
3.3.1-18	3.3.1-18
3.3.1-19	3.3.1-19
3.3.1-20	3.3.1-20
3.3.1-21	3.3.1-21
3.3.1-22	3.3.1-22
3.3.2-9	3.3.2-9
3.3.2-10	3.3.2-10
3.3.2-11	3.3.2-11
3.3.2-12	3.3.2-12
3.3.2-13	3.3.2-13
3.3.2-14	3.3.2-14
3.3.2-15	3.3.2-15

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

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

(4) Deleted

(5) Deleted

(6) Deleted

(7) Deleted

(8) Deleted

(9) Deleted

(10) Mitigation Strategy License Condition

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

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

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

(2) Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, pursuant to the Act and 10 CFR Part 50, to possess but not operate the facility at the designated location in Burke County, Georgia, in accordance with the procedures and limitations set forth in this license;

(3) Southern Nuclear, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

(4) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70 to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(5) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components;

(6) Southern Nuclear, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility authorized herein.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter 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 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. 147 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

Table 3.3.1-1 (page 1 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1.	Manual Reactor Trip	1,2	2	B	SR 3.3.1.13	NA	NA
		3(a), 4(a), 5(a)	2	C	SR 3.3.1.13	NA	NA
2.	Power Range Neutron Flux						
	a. High	1,2	4	D	SR 3.3.1.1 SR 3.3.1.2 SR 3.3.1.7(n)(o) SR 3.3.1.11(n)(o) SR 3.3.1.15	≤ 111.3% RTP	109% RTP
	b. Low	1(b), 2	4	E	SR 3.3.1.1 SR 3.3.1.8(n)(o) SR 3.3.1.11(n)(o) SR 3.3.1.15	≤ 27.3% RTP	25% RTP
3.	Power Range Neutron Flux High Positive Rate	1,2	4	E	SR 3.3.1.7(n)(o) SR 3.3.1.11(n)(o) SR 3.3.1.15	≤ 6.3% RTP with time constant ≥ 2 sec	5% RTP with time constant ≥ 2 sec
4.	Intermediate Range Neutron Flux	1(b), 2(c)	2	F,G	SR 3.3.1.1 SR 3.3.1.8(n)(o) SR 3.3.1.11(n)(o)	≤ 41.9% RTP	25% RTP
		2(d)	2	H	SR 3.3.1.1 SR 3.3.1.8(n)(o) SR 3.3.1.11(n)(o)	≤ 41.9% RTP	25% RTP

(continued)

(a) With Reactor Trip Breakers (RTBs) closed and Rod Control System capable of rod withdrawal.

(b) Below the P-10 (Power Range Neutron Flux) interlocks.

(c) Above the P-6 (Intermediate Range Neutron Flux) interlocks.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(n) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(o) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.1-1 (page 2 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5.	Source Range Neutron Flux	2(d)	2	I,J	SR 3.3.1.1 SR 3.3.1.8(n)(o) SR 3.3.1.11(n)(o)	≤ 1.7 E5 cps	1.0 E5 cps
		3(a), 4(a), 5(a)	2	J,K	SR 3.3.1.1 SR 3.3.1.7(n)(o) SR 3.3.1.11(n)(o)	≤ 1.7 E5 cps	1.0 E5 cps
		3(e), 4(e), 5(e)	1	L	SR 3.3.1.1 SR 3.3.1.11(n)(o)	NA	NA
6.	Overtemperature ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.3 SR 3.3.1.6 SR 3.3.1.7(n)(o) SR 3.3.1.10(n)(o) SR 3.3.1.15	Refer to Note 1 (Page 3.3.1-20)	Refer to Note 1 (Page 3.3.1-20)
7.	Overpower ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7(n)(o) SR 3.3.1.10(n)(o) SR 3.3.1.15	Refer to Note 2 (Page 3.3.1-21)	Refer to Note 2 (Page 3.3.1-21)

(continued)

(a) With RTBs closed and Rod Control System capable of rod withdrawal.

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

(e) With the RTBs open. In this condition, source range Function does not provide reactor trip but does provide input to the High Flux at Shutdown Alarm System (LCO 3.3.8) and indication.

(n) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(o) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.1-1 (page 3 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
8.	Pressurizer Pressure						
	a. Low	1[f]	4	M	SR 3.3.1.1 SR 3.3.1.7[n][o] SR 3.3.1.10[n][o] SR 3.3.1.15	≥ 1950 psig	1960[g] psig
	b. High	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7[n][o] SR 3.3.1.10[n][o] SR 3.3.1.15	≤ 2395 psig	2385 psig
9.	Pressurizer Water Level - High	1[f]	3	M	SR 3.3.1.1 SR 3.3.1.7[n][o] SR 3.3.1.10[n][o]	≤ 93.9%	92%
10.	Reactor Coolant Flow - Low						
	a. Single Loop	1[h]	3 per loop	N	SR 3.3.1.1 SR 3.3.1.7[n][o] SR 3.3.1.10[n][o] SR 3.3.1.15	≥ 89.4%	90%
	b. Two Loops	1[i]	3 per loop	M	SR 3.3.1.1 SR 3.3.1.7[n][o] SR 3.3.1.10[n][o] SR 3.3.1.15	≥ 89.4%	90%

(continued)

(f) Above the P-7 (Low Power Reactor Trips Block) interlock.

(g) Time constants utilized in the lead-lag controller for Pressurizer Pressure-Low are 10 seconds for lead and 1 second for lag.

(h) Above the P-8 (Power Range Neutron Flux) interlock.

(i) Above the P-7 (Low Power Reactor Trips Block) interlock and below the P-8 (Power Range Neutron Flux) interlock.

(n) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(o) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.1-1 (page 4 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
11.	Undervoltage RCPs	1 (f)	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 (n)(o) SR 3.3.1.15	≥ 9481 V	9600 V
12.	Underfrequency RCPs	1 (f)	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 (n)(o) SR 3.3.1.15	≥ 57.1 Hz	57.3 Hz
13.	Steam Generator (SG) Water Level - Low Low	1,2	4 per SG	E	SR 3.3.1.1 SR 3.3.1.7 (n)(o) SR 3.3.1.10 (n)(o) SR 3.3.1.15	≥ 35.9%	37.8%

(continued)

(f) Above the P-7 (Low Power Reactor Trips Block) interlock.

(n) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(o) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.1-1 (page 5 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
14.	Turbine Trip						
	a. Low Fluid Oil Pressure	1(j)	3	O	SR 3.3.1.10(n)(o) SR 3.3.1.16	≥ 500 psig	580 psig
	b. Turbine Stop Valve Closure	1(j)	4	P	SR 3.3.1.10 SR 3.3.1.14	≥ 90% open	96.7% open
15.	Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS)	1,2	2 trains	Q	SR 3.3.1.13	NA	NA
16.	Reactor Trip System Interlocks						
	a. Intermediate Range Neutron Flux, P-6	2(d)	2	R	SR 3.3.1.11 SR 3.3.1.12	≥ 1.2E-5% RTP	2.0E-5% RTP
	b. Low Power Reactor Trips Block, P-7	1	1 per train	S	SR 3.3.1.5	NA	NA
	c. Power Range Neutron Flux, P-8	1	4	S	SR 3.3.1.11 SR 3.3.1.12	≤ 50.3% RTP	48% RTP
	d. Power Range Neutron Flux, P-9	1	4	S	SR 3.3.1.11 SR 3.3.1.12	≤ 40.6% RTP	40% RTP
	e. Power Range Neutron Flux, P-10 and input to P-7	1,2	4	R	SR 3.3.1.11 SR 3.3.1.12	(l,m)	(l,m)
	f. Turbine Impulse Pressure, P-13	1	2	S	SR 3.3.1.10 SR 3.3.1.12	≤ 12.3% Impulse Pressure Equivalent turbine	10% Impulse Pressure Equivalent turbine

(continued)

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(j) Above the P-9 (Power Range Neutron Flux) interlock.
(l) For the P-10 input to P-7, the Allowable Value is ≤ 12.3% RTP and the Nominal Trip Setpoint is 10% RTP.
(m) For the Power Range Neutron Flux, P-10, the Allowable Value is ≥ 7.7% RTP and the Nominal Trip Setpoint is 10% RTP.
(n) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.
(o) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.1-1 (page 6 of 9)
Reactor Trip System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
17.	Reactor Trip Breakers[k]	1,2	2 trains	T,V	SR 3.3.1.4	NA	NA
		3(a), 4(a), 5(a)	2 trains	C	SR 3.3.1.4	NA	NA
18.	Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms	1,2	1 each per RTB	U,V	SR 3.3.1.4	NA	NA
		3(a), 4(a), 5(a)	1 each per RTB	C	SR 3.3.1.4	NA	NA
19.	Automatic Trip Logic	1,2	2 trains	Q,V	SR 3.3.1.5	NA	NA
		3(a), 4(a), 5(a)	2 trains	C	SR 3.3.1.5	NA	NA

(a) With RTBs closed and Rod Control System capable of rod withdrawal.

(k) Including any reactor trip bypass breakers that are racked in and closed for bypassing an RTB.

Table 3.3.1-1 (page 7 of 9)
Reactor Trip System Instrumentation

Note 1: Overtemperature Delta-T

The Allowable Value of each input to the Overtemperature Delta-T function as defined by the equation below shall not exceed its as-left value by more than the following:

(1) 0.5% ΔT span for the ΔT channel
(2) 0.5% ΔT span for the T_{avg} channel
(3) 0.5% ΔT span for the pressurizer pressure channel
(4) 0.5% ΔT span for the $f_1(AFD)$ channel

$$\left[100\frac{\Delta T}{\Delta T_0}\frac{(1+\tau_1 s)}{(1+\tau_2 s)}\frac{1}{(1+\tau_3 s)}\right] \le \left[K_1 - K_2\frac{(1+\tau_4 s)}{(1+\tau_5 s)}\left[T\frac{1}{(1+\tau_6 s)} - T'\right]^{(p)} - K_3(P' - P) - f_1(AFD)\right]$$

Where:

ΔT	measured loop specific RCS differential temperature, degrees F
ΔT_0	indicated loop specific RCS differential at RTP, degrees F
$\frac{1+\tau_1 s}{1+\tau_2 s}$	lead-lag compensator on measured differential temperature
τ_1, τ_2	time constants utilized in lead-lag compensator for differential temperature: $\tau_1 = 0$ seconds, $\tau_2 = 0$ seconds
$\frac{1}{1+\tau_3 s}$	lag compensator on measured differential temperature
τ_3	time constant utilized in lag compensator for differential temperature, ≤ 6 seconds
K_1	fundamental setpoint, $\le 114.9\%$ RTP
K_2	modifier for temperature, = 2.24% RTP per degree F
$\frac{1+\tau_4 s}{1+\tau_5 s}$	lead-lag compensator on dynamic temperature compensation
τ_4, τ_5	time constants utilized in lead-lag compensator for temperature compensation: $\tau_4 \ge 28$ seconds, $\tau_5 \le 4$ seconds
T	measured loop specific RCS average temperature, degrees F
$\frac{1}{1+\tau_6 s}$	lag compensator on measured average temperature
τ_6	time constant utilized in lag compensator for average temperature, ≤ 6 seconds
T'	indicated loop specific RCS average temperature at RTP, ≤ 588.4 degrees F
K_3	modifier for pressure, = 0.177% RTP per psig
P	measured RCS pressurizer pressure, psig
P'	reference pressure, ≥ 2235 psig
s	Laplace transform variable, inverse seconds

Table 3.3.1-1 (page 8 of 9)
Reactor Trip System Instrumentation

Note 1: Overtemperature Delta-T (continued)

f_1(AFD) modifier for Axial Flux Difference (AFD):

1. for AFD between -23% and +10%, = 0% RTP
2. for each % AFD is below -23%, the trip setpoint shall be reduced by 3.3% RTP
3. for each % AFD is above +10%, the trip setpoint shall be reduced by 1.95% RTP

(p) The compensated temperature difference $\frac{(1+\tau_4 s)}{(1+\tau_5 s)}\left[T\frac{1}{(1+\tau_6 s)} - T'\right]$ shall be no more negative than 3 degrees F.

Note 2: Overpower Delta-T

The Allowable Value of each input to the Overpower Delta-T function as defined by the equation below shall not exceed its as-left value by more than the following:

(1) 0.5% ΔT span for the ΔT channel
(2) 0.5% ΔT span for the T_{avg} channel

$$\left[100\frac{\Delta T}{\Delta T_0}\frac{(1+\tau_1 s)}{(1+\tau_2 s)}\frac{1}{(1+\tau_3 s)}\right] \le \left[K_4 - \left[K_5\frac{(\tau_7 s)}{(1+\tau_7 s)}\frac{1}{(1+\tau_6 s)}T\right] - K_6\left[T\frac{1}{(1+\tau_6)} - T'\right] - f_2(AFD)\right]$$

Where:

ΔT	measured loop specific RCS differential temperature, degrees F
ΔT_0	indicated loop specific RCS differential at RTP, degrees F
$\frac{1+\tau_1 s}{1+\tau_2 s}$	lead-lag compensator on measured differential temperature
τ_1, τ_2	time constants utilized in lead-lag compensator for differential temperature: $\tau_1 = 0$ seconds, $\tau_2 = 0$ seconds
$\frac{1}{1+\tau_3 s}$	lag compensator on measured differential temperature
τ_3	time constant utilized in lag compensator for differential temperature, ≤ 6 seconds
K_4	fundamental setpoint, ≤ 110% RTP
K_5	modifier for temperature change: ≥ 2% RTP per degree F for increasing temperature, ≥ 0% RTP per degree F for decreasing temperature
$\frac{\tau_7 s}{1+\tau_7 s}$	rate-lag compensator on dynamic temperature compensation
τ_7	time constant utilized in rate-lag compensator for temperature compensation, ≥ 10 seconds
T	measured loop specific RCS average temperature, degrees F
$\frac{1}{1+\tau_6 s}$	lag compensator on measured average temperature

Table 3.3.1-1 (page 9 of 9)
Reactor Trip System Instrumentation

Note 2: Overpower Delta-T (continued)

τ_6	time constant utilized in lag compensator for average temperature, ≤ 6 seconds
K_6	modifier for temperature: ≥ 0.244% RTP per degree F for T > T", = 0% RTP for T ≤ T"
T"	indicated loop specific RCS average temperature at RTP, ≤ 588.4 degrees F
s	Laplace transform variable, inverse seconds
f_2(AFD)	modifier for Axial Flux Difference (AFD), = 0% RTP for all AFD

Table 3.3.2-1 (page 1 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
1. Safety Injection						
a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
c. Containment Pressure - High 1	1,2,3	3	D	SR 3.3.2.1 SR 3.3.2.4(j)(j) SR 3.3.2.7(j)(j) SR 3.3.2.8	≤ 4.4 psig	3.8 psig
d. Pressurizer Pressure - Low	1,2,3(a)	4	D	SR 3.3.2.1 SR 3.3.2.4(j)(j) SR 3.3.2.7(j)(j) SR 3.3.2.8	≥ 1856 psig	1870 psig
e. Steam Line Pressure - Low	1,2,3(a)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4(j)(j) SR 3.3.2.7(j)(j) SR 3.3.2.8	≥ 570(b) psig	585(b) psig

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(i) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(j) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.2-1 (page 2 of 7)
Engineered Safety Feature Actuation System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
2.	Containment Spray						
	a. Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
	b. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
	c. Containment Pressure						
	High - 3	1,2,3	4	E	SR 3.3.2.1 SR 3.3.2.4(i)(j) SR 3.3.2.7(i)(j) SR 3.3.2.8	≤ 22.4 psig	21.5 psig

(continued)

(i) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(j) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.2-1 (page 3 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
3. Phase A Containment Isolation						
(a) Manual Initiation	1,2,3,4	2	B	SR 3.3.2.6	NA	NA
(b) Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
(c) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
4. Steam Line Isolation						
a. Manual Initiation	$1,2^{(c)},3^{(c)}$	2	F	SR 3.3.2.6	NA	NA
b. Automatic Actuation Logic and Actuation Relays	$1,2^{(c)},3^{(c)}$	2	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA

(continued)

(c) Except when one main steam isolation valve and associated bypass isolation valve per steam line is closed.

Table 3.3.2-1 (page 4 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
4. Steam Line Isolation (continued)						
c. Containment Pressure - High 2	1,2(c), 3(c)	3	D	SR 3.3.2.1 SR 3.3.2.4(i)(j) SR 3.3.2.7(i)(j) SR 3.3.2.8	≤ 15.4 psig	14.5 psig
d. Steam Line Pressure						
(1) Low	1,2(c), 3(a)(c)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4(i)(j) SR 3.3.2.7(i)(j) SR 3.3.2.8	≥ 570 (b) psig	585 (b) psig
(2) Negative Rate - High	3(d)(c)	3 per steam line	D	SR 3.3.2.1 SR 3.3.2.4(i)(j) SR 3.3.2.7(i)(j) SR 3.3.2.8	≤ 125 (e) psi/sec	100 (e) psi/sec

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.

(b) Time constants used in the lead/lag controller are $t_1 \geq 50$ seconds and $t_2 \leq 5$ seconds.

(c) Except when one main steam isolation valve and associated bypass isolation valve per steam line is closed.

(d) Below the P-11 (Pressurizer Pressure) interlock.

(e) Time constant utilized in the rate/lag controller is ≥ 50 seconds.

(i) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(j) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.2-1 (page 5 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
5. Turbine Trip and Feedwater Isolation						
a. Automatic Actuation Logic and Actuation Relays	1,2(f)	2 trains	H	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. Low RCS T_{avg}	1,2(f)	4	I	SR 3.3.2.1 SR 3.3.2.4(j) SR 3.3.2.7(j)	≥ 561.5 °F	564 °F
Coincident with Reactor Trip, P-4	Refer to Function 8a for all P-4 requirements.					
c. SG Water Level-High High (P-14)	1,2(f)	4 per SG	I	SR 3.3.2.1 SR 3.3.2.4(j) SR 3.3.2.7(j) SR 3.3.2.8	≤ 82.5%	82.0%
d. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	G	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. SG Water Level-Low Low	1,2,3	4 per SG	D	SR 3.3.2.1 SR 3.3.2.4(j) SR 3.3.2.7(j) SR 3.3.2.8	≥ 35.9%	37.8%

(continued)

(f) Except when one MFIV or MFRV, and its associated bypass valve per feedwater line is closed and deactivated or isolated by a closed manual valve.

(i) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(j) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.2-1 (page 6 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
6. Auxiliary Feedwater (continued)						
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Trip of all Main Feedwater Pumps	1,2[g]	1 per pump	J	SR 3.3.2.6	NA	NA
7. Semi-automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4[h]	2	C	SR 3.3.2.2 SR 3.3.2.3 SR 3.3.2.5	NA	NA
b. Refueling Water Storage Tank (RWST) Level-Low Low[j]	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.4[(i)(j)] SR 3.3.2.7[(i)(j)] SR 3.3.2.8	≤ 216.6 in. and ≥ 210.4 in.	213.5 in.
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(g) When the Main Feedwater System is operating to supply the SGs.

(h) In MODE 4, only 1 train is required to be OPERABLE to support semi-automatic switchover for the RHR pump that is required to be OPERABLE in accordance with Specification 3.5.3, ECCS-shutdown.

(i) If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service.

(j) The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the Nominal Trip Setpoint (NTSP) at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

Table 3.3.2-1 (page 7 of 7)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
8. ESFAS Interlocks						
a. Reactor Trip, P-4	1,2,3	1 per train, 2 trains	F	SR 3.3.2.9	NA	NA
b. Pressurizer Pressure, P-11	1,2,3	3	L	SR 3.3.2.4 SR 3.3.2.7	≤ 2010 psig	2000 psig

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 165 TO RENEWED FACILITY OPERATING LICENSE NPF-68

AND

AMENDMENT NO. 147 TO RENEWED FACILITY OPERATING LICENSE NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By application dated March 3, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110660458), as supplemented by letters dated August 12, 2011 (ADAMS Accession No. ML11228A119) and December 9, 2011 (ADAMS Accession Nos. ML11347A350 and ML11347A349), Southern Nuclear Operating Company, Inc. (SNC, the licensee), requested changes to the Technical Specifications (TSs) for the Vogtle Electric Generating Plant, Units 1 and 2 (VEGP). The supplements dated August 12, 2011 and December 9, 2011, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published the *Federal Register* on May 24, 2011 (76 FR 30206).

The proposed changes would correct a non-conservative error discovered in the Engineered Safety Feature (ESF) Permissive P-14, Steam Generator (SG) Water Level High-High instrument setpoint and associated allowable value. This TS change incorporates the corrected Nominal Trip Set Point (NTSP) and allowable value in TS Table 3.3.2-1, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation," for Function 5c, SG Water Level High-High. The proposed change would revise the VEGP TSs to be consistent with the U.S. Nuclear Regulatory Commision (NRC)-approved Technical Specification Task Force (TSTF) traveler TSTF-493, Revision 4, Option A. Under Option A two surveillance notes would be added to the surveillance requirements (SRs) in the Surveillance Requirement Column of TS 3.3.1 and TS 3.3.2 Instrumentation Function Tables 3.3.1-1 and 3.3.2-1 respectively. Specifically, surveillance Notes would be added to SRs that require verifying trip setpoint setting values, i.e., channel calibration, channel operational test, and trip actuating device operational test SRs. The list, of affected instrument Functions, is included in Enclosure 1 of the license amendment request (LAR). Also, SNC is proposing the following administrative changes to VEGP TS. The proposed change corrects a typographical error on TS Table 3.3.1-1, page 9 of 9 and deletes an expired allowance provided by TS Table 3.3.2-1, Note J. The availability of this TS improvement was announced in the *Federal Register* on May 11, 2010 (75 FR 26294).

The LAR for VEGP described that the ESF Permissive P-14 protects against excessive feedwater flow in the event of a feedwater control system malfunction or an operator error. At power conditions, this excess flow causes a greater load demand on the Reactor Coolant System (RCS) due to increased sub-cooling in the steam generator. With the plant at no-load conditions, the addition of cold feedwater may cause a decrease in RCS temperature and thus a reactivity insertion due to the effects of the negative moderator temperature coefficient of reactivity. The P-14 permissive also protects the turbine from steam generator moisture carryover. If the SG high-high water level protection setpoints are inadequate, P-14 function may not be accomplished in response to a feedwater malfunction during a design basis event.

Previously, the NRC staff had raised a concern about the use of TSs Allowable Values (AVs)[1] calculated using methods in the industry standard ISA-S67.04-2006 Part 2, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." Specifically, the staff was concerned that use of these values to assess instrument channel performance during testing, may result in non-conservative decisions about the equipment operability. In the LAR, the licensee proposed changing the setpoint for P-14 to resolve these operability determination issues associated with potentially non-conservative TSs AV for P-14. In addition, the proposed change will resolve operability determination issues related to relying on AVs associated with TSs Limiting Safety System Settings (LSSSs)[2] to ensure that TSs requirements, not plant procedures, will be used for assessing instrument channel operability.

For instrument Functions not required to have the surveillance Notes described above or for Functions in other instrumentation TSs not described above, TSTF-493, Revision 4, Option A, revised the TS Bases for SRs which verify setpoint setting values to state that the required surveillance ensures that the instruments are functioning as required. The TS Bases state: "There is a plant-specific program which verifies that the instrument channel(s) will function as required by verifying the as-left setting and as-found trip values are consistent with those established by the setpoint methodology." SNC has included this statement in the VEGP TS Bases for all SRs which verify setpoint setting values for instrument Functions not required to have the surveillance Notes.

The regulatory basis for the proposed TS changes is described in Section 2.0 of this Safety Evaluation (SE). The technical evaluation, including the approach used to assess the instrumentation methodology, is discussed in Section 3.0 of this SE.

---

1 - The instrument setting "Allowable Value" is a limiting value of an instrument's as-found trip setting used during surveillances. The AV is more conservative than the Analytical Limit (AL) to account for applicable instrument measurement errors consistent with the plant-specific setpoint methodology. If during testing, the actual instrumentation setting is less conservative than the AV, the channel is declared inoperable and actions must be taken consistent with the TS requirements.

2 - 10 CFR 50.36(c)(1)(ii)(a) states: "Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions."

2.0 REGULATORY EVALUATION

Plant protective systems are designed to initiate reactor trips (scrams) or other protective actions before selected unit parameters exceed ALs assumed in the safety analysis in order to prevent violation of the reactor core safety limits (SLs) and RCS pressure SL from postulated anticipated operational occurrences (AOOs) and to assist the ESF systems in mitigating accidents. The reactor core SLs and RCS pressure SL ensure that the integrity of the reactor core and RCS is maintained. The design criteria for instrumentation used by this evaluation are:

VEGP's Updated Final Safety Analysis Report (UFSAR) Section 1.2.12, "Principal Design Criteria" states, "The VEGP is designed to comply with the intent of the General Design Criteria for Nuclear Power Plants contained in Appendix A to Title 10, *Code of Federal Regulations*, Part 50 (10 CFR) Part 50. The details of compliance to the general design criteria are provided in Section 3.1." VEGP's UFSAR Section 3.1, "Conformance with the NRC General Design Criteria (GDC)" states:

> This section briefly discusses the extent to which the design criteria for VEGP structures, systems, and components important to safety comply with Title 10, *Code of Federal Regulations*, Part 50 (10 CFR 50), Appendix A, General Design Criteria for Nuclear Power Plants. As presented in this section, each criterion is first quoted and then discussed in enough detail to demonstrate compliance of the VEGP with each criterion.

The following regulatory bases and guidance documents pertain to the proposed TS change:

> Appendix A to 10 CFR 50, General Design Criteria (GDC) 13, "Instrumentation and Control," requires that instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, anticipated operational occurrences, and accident conditions as appropriate to ensure 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.

VEGP's UFSAR Section 3.1 discussion of GDC 13 is as follows:

> Instrumentation and controls are provided to monitor and control neutron flux, control rod position, fluid temperatures, pressures, flows, and levels, as necessary, to assure that adequate plant safety can be maintained. Instrumentation is provided in the reactor coolant system, steam and power conversion system, containment; engineered safety features systems, radioactive waste management systems, and other auxiliary systems. Parameters that must be provided for operator use under normal operating and accident conditions are indicated in the control room in proximity to the controls for maintaining the indicated parameters in their proper ranges.
>
> The quantity and types of process instrumentation provided ensure safe and orderly operation of all systems over the full design range of the plant. These systems are described in chapters 6, 7, 8, 9, 10, 11, and 12.

The regulation at 10 CFR Part 50, Appendix A, GDC 20, Protection System Functions, states:

> The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

VEGP's UFSAR Section 3.1 discussion of GDC 20 is as follows:

> A fully automatic protection system with appropriate redundant channels is provided to cope with transient events where insufficient time is available for manual corrective action. The design basis for all protection systems is in accordance with the guidelines of Institute of Electrical and Electronic Engineers (IEEE) Standards 279-1971 and 379-1972. The reactor protection system automatically initiates a reactor trip when any variable monitored by the system or combination of monitored variables exceeds the normal operating range. Setpoints are designed to provide an envelope of safe operating conditions with adequate margin for uncertainties to ensure that the fuel design limits are not exceeded.
>
> Reactor trip is initiated by removing power to the rod drive mechanisms of all the rod cluster control assemblies. This causes the rods to insert by gravity, thus rapidly reducing the reactor power. The response and adequacy of the protection system have been verified by analysis of anticipated transients.
>
> The ESF actuation system automatically initiates emergency core cooling and other safety functions by sensing accident conditions, using redundant analog channels measuring diverse variables. Manual actuation of safety features may be performed where ample time is available for operator action. The ESF actuation system automatically trips the reactor on a manual or automatic safety injection signal.

The Commission's regulatory requirements related to the content of the TS are contained in 10 CFR 50.36. The regulation at 10 CFR 50.36 requires applicants for nuclear power plant operating licenses to include TS as part of the license. The regulation requires, in part, that the TS include items in the following categories: (1) Safety limits, limiting safety systems settings, and limiting control settings; (2) Limiting conditions for operation; (3) Surveillance requirements; (4) Design features; and (5) Administrative controls. However, the regulation does not specify the particular requirements to be included in TSs.

Instrumentation required by the TSs has been designed to assure that the applicable safety analysis limits will not be exceeded during accidents and AOOs. This is achieved by specifying NTSPs, including testing requirements to assure the necessary quality of systems, in terms of parameters directly monitored by the applicable instrumentation systems for LSSSs, as well as specifying LCOs on other plant parameters and equipment in accordance with 10 CFR 50.36(c)(2).

- Section 50.36(c)(1)(i)(A) states in part:

  Safety limits for nuclear reactors are limits upon important process variables that are found to be necessary to reasonably protect the integrity of certain of the physical barriers that guard against the uncontrolled release of radioactivity.

- Section 50.36(c)(1)(ii)(A) states in part:

  Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, it is determined that the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor.

- Section 50.36(c)(2) states in part:

  Limiting conditions for operation. (i)Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

- Section 50.36(c)(3) states in part:

  Surveillance requirements 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 limiting conditions for operation will be met.

- Section 50.36(c)(5), states in part:

  Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure the operation of the facility in a safe manner.

- Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," issued December 1999, describes a method acceptable to the staff of the NRC for complying with the NRC's regulations for ensuring that setpoints for safety-related instrumentation are initially within and remain within the TS limits.

- Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, Technical Specifications, Regarding Limiting Safety System Settings during Periodic Testing and Calibration of Instrument Channels," dated August 24, 2006.

In addition, the technical requirements from the following TSTF Traveler also pertain to this proposed TS change:

- TSTF Traveler TSTF 493, Revision 4, "Clarify Application of Setpoint Methodology for LSSS Functions". The Notice of Availability (NOA) for this Traveler was published in the *Federal Register* 75 FR 26294 on May 11, 2010.

3.0 TECHNICAL EVALUATION

3.1. Background

3.1.1 Nominal Trip Setpoints

The licensee added the term "Nominal Trip Setpoint" [NTSP] as terminology for the setpoint value calculated by means of the plant-specific setpoint methodology documented in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

The licensee stated that the NTSP is more conservative than the AV and is the least conservative value to which the instrument channel is adjusted following surveillance testing. The NTSP is the limiting setting for the channel trip setpoint considering all credible instrument errors associated with the instrument channel. The field setting is the NTSP with margin added. The field setting is more conservative than the NTSP. The NTSP is the least conservative value (with an as-left tolerance (ALT)) to which the channel must be reset at the conclusion of periodic testing to ensure that the AL will not be exceeded during an AOO or accident before the next periodic surveillance or calibration. It is impossible to set a physical instrument channel to an exact value, so a calibration tolerance is established around the NTSP. Therefore, the NTSP adjustment is considered successful if the field setting is within the ALT (i.e., a range of values around the NTSP).

The AVs and NTSPs are included in the VEGP TSs. The AVs indicate the least conservative value that the as-found trip point may have during testing for the channel to be operable. The allowable values listed in the TS satisfy the 10 CFR 50.36 requirements that the LSSS be in the TSs. Additionally, to ensure proper use of the AV, field setting, and NTSP, the methodology for calculating the as-left and as-found tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions which is incorporated by reference in the UFSAR and listed in surveillance Note 2 as discussed in Section 3.1.2, below.

3.1.2 Addition of Surveillance Notes to TS Functions

Setpoint calculations calculate a NTSP based on the AL of the Safety Analysis to ensure that trips or protective actions will occur prior to exceeding the process parameter value assumed by the Safety Analysis calculations. These setpoint calculations may also calculate an allowable limit of change to be expected (i.e., the AFT [as found tolerance]) between performance of the surveillance tests for assessing the value of the setpoint setting. The least conservative as-found instrument setting value that a channel can have during calibration without requiring performance of a TS remedial action is the setpoint AV. Discovering an instrument setting to be less conservative than the setting AV indicates that there may not be sufficient margin between the NTSP setting and the AL. The TSs channel calibrations are performed to verify channels are operating within the assumptions of the setpoint methodology used to calculate the NTSP and that channel settings have not exceeded the TS AVs. When the measured as-found setpoint is non-conservative with respect to the AV, the channel is inoperable and the actions identified in the TSs must be taken.

Surveillance Note 1

Surveillance Note 1 states, "If the as-found channel setpoint is outside its predefined as-found tolerance, then the channel shall be evaluated to verify that it is functioning as required before returning the channel to service."

The Note requires evaluation of channel performance for the condition where the as-found setting for the channel setpoint is outside its AFT but conservative with respect to the AV. Evaluation of channel performance will verify that the channel will continue to function in accordance with safety analysis assumptions and the channel performance assumptions in the VEGP setpoint methodology and establishes a high confidence of acceptable channel performance in the future. Because the AFT allows for both conservative and non-conservative deviation from the NTSP, changes in channel performance that are conservative with respect to the NTSP will also be detected and evaluated for possible effects on expected performance. The purpose of the assessment is to ensure confidence in the channel performance prior to returning the channel to service. For channels determined to be operable but degraded, after returning the channel to service the channels will be evaluated under the VEGP Corrective Action Program (CAP). Entry into the CAP will ensure required review and documentation of the condition to establish a reasonable expectation for continued operability.

Verifying that a trip setting is conservative with respect to the AV when a surveillance is performed does not by itself verify the instrument channel will operate properly in the future because setpoint drift is a concern. Although the channel was operable during the previous surveillance interval, if it is discovered that channel performance is outside the performance predicted by the plant setpoint calculations for the test interval, then the design basis for the channel may not be met, and proper operation of the channel for a future demand cannot be assured. Surveillance Note 1 formalizes the establishment of the appropriate AFT for each channel. This AFT is applied about the NTSP or about any other more conservative trip setpoint. The as-found setting tolerance ensures that channel operation is consistent with the assumptions or design inputs used in the setpoint calculations and establishes a high confidence of acceptable channel performance in the future. Because the setting tolerance allows for both conservative and non-conservative deviation from the NTSP, changes in channel performance that are conservative with respect to the NTSP will also be detected and evaluated for possible effects on expected performance.

Implementation of surveillance Note 1 requires the licensee to calculate an AFT. The licensee calculated the AFT using the Square-Root-Sum-of-the-Squares (SRSS) method. The methodology used to combine the uncertainty components for a channel is an appropriate combination of those groups which are statistically and functionally independent. Those uncertainties which are not independent are conservatively treated by arithmetic summation and then systematically combined with the independent terms. The basic methodology used is the SRSS technique and includes:

- channel statistical allowance
- process measurement accuracy
- primary element accuracy
- sensor reference accuracy
- sensor calibration accuracy
- sensor measurement and test equipment accuracy
- Sensor pressure effects

- Sensor temperature effects
- Sensor drift
- Rack calibration accuracy
- Rack measurement and test equipment accuracy
- Rack temperature effects
- Rack drift
- Environmental allowance
- One directional, known magnitude allowance

Surveillance Note 2

Surveillance Note 2 states:

> The instrument channel setpoint shall be reset to a value that is within the as-left tolerance around the NTSP at the completion of the surveillance; otherwise, the channel shall be declared inoperable. Setpoints more conservative than the NTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures (field setting) to confirm channel performance. The methodologies used to determine the as-found and the as-left tolerances are specified NMP ES 033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

The second surveillance Note requires that the as-left setting for the channel be returned to within the ALT of the NTSP. Where a setpoint more conservative than the NTSP is used in the plant surveillance procedures, the ALT and AFT, as applicable, will be applied to the surveillance procedure setpoint. This will ensure that sufficient margin to the Safety Limit (SL) and AL is maintained. If the as-left channel setting cannot be returned to a setting within the ALT of the NTSP, then the channel would be declared inoperable. The second surveillance Note also requires that the NTSP and the methodologies for calculating the ALT and the AFT be included in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions.

To implement surveillance Note 2 the ALT for some instrumentation Function channels is established to ensure that realistic values are used that do not mask instrument performance. The licensee stated that setpoint calculations assume that the instrument setpoint is left at the NTSP within a specific ALT (e.g., 25 pounds per square inch-gauge (psig) + 2 psig). A Tolerance is necessary because it is not possible to read and adjust a setting to an absolute value due to the readability and/or accuracy of the test instruments or the ability to adjust potentiometers. The licensee stated that the ALT is normally as small as possible considering the tools and the objective to meet an as low as reasonably achievable calibration setting of the instruments. The ALT is considered in the setpoint calculation. Failure to set the actual plant trip setpoint to the NTSP and within the ALT would invalidate the assumptions in the setpoint calculation because any subsequent instrument drift would not start from the expected as-left setpoint.

Functions Not Annotated with Surveillance Notes

TSTF-493, Revision 4, Option A, as adopted by the licensee, stated that for Functions not requiring the two surveillance Notes, the TS Bases are revised to reflect that a determination that the instrument is functioning as required will be performed prior to returning the channel to service when the channel is found conservative with respect to the AV but outside the predefined tolerance (AFT). This determination considers whether the instrument is degraded or is capable

of being reset and performing its specified safety function. If the channel is determined to be functioning as required (i.e., the channel can be adjusted to within the ALT and is determined to be functioning normally based on the determination performed prior to returning the channel to service), then the channel is Operable and can be restored to service. The licensee enters the as-found setting values condition into the CAP for further analysis and trending.

3.1.3 Evaluation of Exclusion Criteria

Exclusion criteria are used to determine which Functions do not need to receive the additional surveillance test requirements. Instruments are excluded from the additional requirements when their functional purpose can be described as (1) a manual actuation circuit, (2) an automatic actuation logic circuit, or (3) an instrument function that derives input from contacts which have no associated sensor or adjustable device. Many permissives or interlocks are excluded if they derive input from a sensor or adjustable device that is tested as part of another TS function. The list of affected Functions in Enclosure 1 of the LAR was developed by the licensee on the principle that all Functions in the affected TSs are included unless one or more of the exclusions that follow apply. In general, SNC excluded the following functions from additional surveillance testing requirements applied as surveillance Notes:

1. The two surveillance Notes are not applied to Functions which utilize manual actuation circuits, automatic actuation logic circuits, or to instrument functions that derive input from contacts which have no associated sensor or adjustable device (i.e., limit switches, breaker position switches, manual actuation switches, float switches, proximity detectors, etc.). In addition, the two surveillance Notes do not apply to those permissives and interlocks that derive input from a sensor or adjustable device that is tested as part of another TS function.

   The two surveillance Notes are not applied to Functions which utilize mechanical components to sense the trip setpoint, or to manual initiation circuits (the latter are not explicitly modeled in the accident analysis) because current functional SRs, which have no setpoint verifications, adequately demonstrate the operability of these Functions. Surveillance Note 1 requires a comparison of the periodic SR results to provide an indication of channel (or individual device) performance. This comparison is not valid for most mechanical components. While it is possible to verify that a limit switch perform its function at a point of travel, a change in the surveillance result is likely caused by the mechanical properties of the limit switch, for example, not that the input/output relationship has changed. Therefore, a comparison of SR results would not provide an indication of the channel or component performance.

2. The two surveillance Notes are not applied to TSs associated with mechanically operated safety relief valves. The performance of these components is already controlled (i.e., trended with as-left and as-found tolerances) under the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants testing program.

3. The two surveillance Notes are not normally applied to Functions and SRs, which test only digital components. Digital components, such as actuation logic circuits, relays, and input/output modules are not expected to exhibit drift characteristics; therefore, a change in result between surveillances or any test result other than the identified TS surveillance acceptance criteria would cause the digital component to be declared inoperable. However, where separate as-left and as-found tolerances are established for digital component SRs, the Note requirements would apply.

The licensee has applied exclusion criteria to the following functions in the following TS Tables:

TS Table 3.3.1-1, "Reactor Trip System Instrumentation" Functions

1. Manual Reactor Trip (manual actuation)
14. Turbine Trip
    b. Turbine Stop Valve Closure (mechanical component)
15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) (Automatic actuation logic circuit)
16. Reactor Trip System Interlocks (Excluded from surveillance Notes. SNC confirms the interlocks derive input from sensors or adjustable devices that is tested as part of another TS function)
17. Reactor Trip Breakers (RTBs) (mechanical component)
18. Reactor Trip Breaker Undervoltage and Shunt Trip Mechanisms (mechanical component)
19. Automatic Trip Logic (Automatic actuation logic circuit)

TS Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation" Functions

1. Safety Injection
    a. Manual Initiation (manual actuation)
    b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
2. Containment Spray
    a. Manual Initiation (manual actuation)
    b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
3. Containment Isolation
    a. Phase A Isolation
        (1) Manual Initiation (manual actuation)
        (2) Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
        (3) Safety Injection (Automatic actuation logic circuit)
4. Steam Line Isolation
    a. Manual Initiation (manual actuation)
    b. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
5. Turbine Trip and Feedwater Isolation
    a. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
    d. Safety Injection (Automatic actuation logic circuit)
6. Auxiliary Feedwater
    a. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
    c. Safety Injection (Automatic actuation logic circuit)
    d. Trip of all Main Feedwater Pumps (SR 3.3.2.6 modified by note stating, "Verification of setpoint not required for manual initiation functions.")
7. Automatic Switchover to Containment Sump
    a. Automatic Actuation Logic and Actuation Relays (Automatic actuation logic circuit)
    b. Refueling Water Storage Tank (RWST) Level Low-Low Coincident with Safety Injection (Automatic actuation logic circuit)
8. ESFAS Interlocks (Excluded from surveillance Notes. SR 3.3.2.9 states, "Verification of setpoint not required." SNC confirms the interlocks derive input from sensors or adjustable devices that is tested as part of another TS function.)

The NRC staff reviewed the list of excluded TS functions and find this list to be acceptable

because each function listed has a functional purpose described as (1) manual actuation circuit, (2) automatic actuation logic circuit, (3) an instrument function that derives input from contacts which have no associated sensor or adjustable device, or (4) derive input from a sensor or adjustable device that is tested as part of another TS function.

The NRC staff has performed a technical evaluation of the licensee's submittals associated with this license amendment request. This evaluation accomplishes the following objectives:

- Verify that the licensee's setpoint calculation methods are adequate to assure that control and monitoring setpoints are established and maintained in a manner consistent with plant safety function requirements.

- Verify that the licensee's setpoint calculation methods are adequate to assure with a high confidence level that required protective actions are initiated before the associated plant process parameters exceed their analytical limits.

- Confirm that the proposed actions to be taken at established calibration intervals and operability determination methods are consistent with safety analysis assumptions and NRC guidance.

Regulatory Guide 1.105, Revision 3 states that the 95/95 tolerance limit is an acceptable criterion for estimating uncertainties. Regulatory Guide 1.105 Revision 3 does not endorse the use of industry standard ISA-S67.04-2006 Part 2, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation," which is referenced in the licensee's submittal. Further, in RIS 2006-17, the NRC staff identified that "if the instrument channel trip setting is not left at a value that is conservative with respect to the Limiting Trip Setpoint, then there may not be assurance that the safety limit will be protected until the next periodic surveillance because instrument drift and other changes to the trip setting can occur. These uncertainties are to be accounted for in the calculation of the Limiting Trip Setpoint. It is the NRC staff's position that the Limiting Trip Setpoint protects the Safety Limit."

Setpoint calculations establish an NTSP based on the Safety Analysis Limit (SAL) of the Safety Analysis to ensure that trips or protective actions occur prior to exceeding the process parameter value assumed by the Safety Analysis calculations. Below is a summary of the setpoint calculation modified in the VEGP's LAR.

3.2 Technical Evaluation

3.2.1 Function 5c, Steam Generator Water Level High-High (P14) Revision

As described above, Engineered Safeguard Feature Permissive P-14 protects against excessive feedwater flow in the event of a feedwater control system malfunction or an operator error. The P-14 permissive also protects the turbine from steam generator moisture carryover. Bases TS B3.3.2 for Function 5, "Turbine Trip and Feedwater Isolation," states that the primary functions of the Turbine Trip and Feedwater Isolation signals are to prevent damage to the turbine due to water in the steam lines, and to stop excessive flow of feedwater to the steam generators. These functions are necessary to mitigate the effects of a high water level in the steam generators, which could result in carryover of water into the steam lines and excessive cool-down of the primary system. When the P-14 setpoint is reached, turbine trip, reactor trip, feedwater isolation, and main

feedwater pump trips occur. At the SG water levels of interest, the effects on measurement uncertainty are such that the indicated SG water level may be lower than actual. In the case of a feedwater malfunction that results in an increase in feedwater flow, accounting for the effects of measurement uncertainty ensures that the P-14 setpoint will be reached and appropriate actions will be initiated before the steam generator can overfill.

On May 27, 2005, VEGP submitted to the NRC its Licensee Event Report (LER) 1-2005-002 (ADAMS Accession No. ML051530400), indicating that the P-14 function may not be accomplished in response to a feedwater malfunction event as described in FSAR Section 15.1.2.1. In this LER, VEGP explained that Westinghouse found that the SG high-high water level protection setpoints were inadequate to ensure main feedwater isolation during a design basis event. Because of this, Westinghouse had recommended reducing the high-high level setpoints from 86.0% to 83.1%. Based on the findings presented by Westinghouse, SNC evaluated the effects of process measurement uncertainties on SG water level measurement and indication to correct the instrument setpoint and AV. SNC took actions to change the setpoint and AV in Technical Specification Table 3.3.2-1 in accordance with NRC Administrative Letter AL-98-10 (NUDOCS Accession Number ML9812280273).

This amendment summarizes the setpoint methodology for the SG Water Level High-High Function and TS changes to permanently change its setpoint and AV. The licensee has requested changes that would:

- Change the SG Water Level High-High Allowable Value from a value of ≤ 87.9% to a value of ≤ 82.5% and the NTSP from a value of 86.0% to a value of 82.0% to correspond to the actual settings that are currently implemented under administrative controls in accordance with NRC AL-98-1, as described above.

- Revise the P-14 interlock setpoint in TS Table 3.3.2.1, "Engineered Safety Feature Actuation System Instrumentation," for Function 5c, SG Water Level High-High.

The licensee provided a summary of the setpoint methodology for the SG Water Level High-High Function in LAR Enclosure 6 (ADAMS Accession No. ML110660458). The setpoint calculation establishes a NTSP based on the SAL of the Safety Analysis to ensure that trips or protective actions will occur prior to exceeding the process parameter value assumed by the Safety Analysis calculations. This setpoint calculation also calculated an allowed limit of expected change (i.e., the as-found tolerance) between performances of the surveillance test for assessing the value of the setpoint setting. The VEGP's LAR includes the following P-14 permissive function and their nominal settings, and as-found and as-left tolerances in its submittal:

Permissive P-14, SG Water Level High-High
P-14 NTS: 82% Rated Thermal Power (RTP)
P-14 As-found tolerance (AFT): ± 1.5% RTP
P-14 ALT: ± 1.5% RTP

Note that the values listed on the LAR are more conservative than the values identified in the LER. In the RAI response received on August 12, 2011 (ADAMS Accession No. ML11228A119), VEGP explained that the requested change to the setpoint and AV is different than the values recommended by Westinghouse in the VEGP's LER because the Westinghouse recommended values provided minimal margin between the AL and the NTSP.

Attachment 1 of the LAR (ADAMS Accession No. ML110660458) summarizes the setpoint methodology used. This attachment describes that this methodology was based on Square-Root-Sum-of-the Squares (SRSS) of applicable uncertainties terms and algebraic addition of the bias terms, as described on the Westinghouse paper, "The Significance of Verifying the SAMA PMC 20.1-1973 Defined Reference Accuracy for the Westinghouse Setpoint Methodology." Further, in the RAI responses received on August 12, 2011 (ADAMS Accession No. ML11228A119) and December 9, 2011 (ADAMS Accession Nos. ML11347A350 and ML11347A349), Westinghouse and VEGP explained that this algorithm is modified for each function to take into consideration process conditions, plant-specific procedures and/or processes, instrumentation, drift or calibration data, etc. Table 1 in Attachment 1 of the LAR defines uncertainties for the instrument components and the calculation for the Channel Statistical Allowance (CSA). Further, the equation in Table 1 in Attachment 1 of the LAR shows the relationship of dependent and independent random terms and bias terms. The CSA is used to estimate the likely maximum uncertainty for anticipated channel performance deviation which is then to be compared with the available margin between the previously established NTSPs and their associated analysis limits, (identified as the "total allowance") to ensure that the estimate of such deviation will not exceed these margins. RAI responses received on August 12, 2011 (ADAMS Accession No. ML11228A119) and December 9, 2011 (ADAMS Accession Nos. ML11347A350 and ML11347A349) described how the data and tolerance limits were selected in a manner that accounts for (with a high confidence level) all credible instrument channel performance uncertainties associated with the operation of the instrument channel. In the RAI response received on August 12, 2011 (ADAMS Accession No. ML11228A119), Westinghouse noted that recorded surveillance procedure data is evaluated typically from at least three operating/fuel cycles, and as-found minus as-left is calculated to determine drift allowances, and as-left minus desired is calculated to verify calibration tolerances characteristics.

The Westinghouse methodology establishes a fixed-magnitude, two-sided (bi-directional) AFT about the NTSP, over which proper operability of the process rack is defined as the ability to be calibrated about the NTSP (with an ALT about the NTSP). In the Westinghouse setpoint methodology, the ALT and the AFT are of the same magnitude, based on the same acceptance criterion (i.e., AFT =ALT). This method does not provide for much room to be allocated to accommodate drift/deviation between successive surveillance intervals. For this method to be implemented, each subsequent surveillance should find the channel within the prescribed AFT = ALT about the NTSP, otherwise at the completion of every surveillance test, the instrument channel setpoint would need to be declared inoperable and then be reset to a value that is within the As-Left Tolerance around the NTSP in accordance with the proposed procedural operability determination requirements. Based on this method, the Allowable Value is the same value as the ALT and AFT. This results in the Westinghouse Setpoint methodology reliance on the NTSP and not on the Limiting Trip Setpoint as defined in ISA-S67.04-2006 or the Limiting Setpoint as defined in RIS 2006-17. The NRC staff notes that although this method may not allow for much deviation from one surveillance to the next surveillance, it is a conservative practice, in that channels are more likely to be readily identified as not performing as expected, which then more readily specifies when remedial action for restoring operability is needed. As a result, this practice is considered to be acceptable to the NRC staff.

3.2.2 Addition of Surveillance Notes to TS Functions

The licensee has added surveillance Notes to the following TS instrumentation specifications: 3.3.1, "Reactor Trip System Instrumentation," and 3.3.2, "Engineered Safety Feature Actuation System Instrumentation." The licensee stated that the determination to include surveillance Notes for specific Functions in these TS Tables is based on these functions being automatic protective devices related to variables having significant safety functions as delineated by 10 CFR 50.36(c)(1)(ii)(A). Furthermore, the licensee stated that if during calibration testing the setpoint is found to be conservative with respect to the AV but outside its predefined AFT band, then the channel shall be brought back to within its predefined calibration tolerance before returning the channel to service. The calibration tolerances are specified in NMP-ES-033-006, Vogtle Setpoint Uncertainty Methodology and Scaling Instructions. Changes to the values will be controlled by 10 CFR 50.59. The licensee has applied surveillance Notes to the following functions in the following TS Tables:

TS Table 3.3.1-1, "Reactor Trip System Instrumentation" Functions

4. Power range Neutron Flux
   a. High
   b. Low
5. Power Range Neutron Flux High Positive Rate
6. Intermediate Range Neutron Flux
7. Source Range Neutron Flux
8. Overtemperature ΔT
9. Overpower ΔT
10. Pressurizer Pressure
    a. Low
    b. High
11. Pressurizer Water Level High
12. Reactor Coolant Flow Low
    a. Single loop
    b. Two loop
13. Undervoltage reactor coolant pumps (RCPs)
14. Underfrequency RCPs
15. Steam Generator (SG) Water Level Low-Low
16. Turbine Trip
    a. Low Fluid Oil Pressure

TS Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation" Functions

1. Safety Injection
   c. Containment Pressure High 1
   d. Pressurizer Pressure Low
   e. Steam Line Pressure Low
2. Containment Spray
   c. Containment Pressure High 3
4. Steam Line Isolation
   c. Containment Pressure High 2
   d. Steam Line Pressure
      1. Low
      2. Negative Rate High
5. Turbine Trip and Feedwater Isolation

b. Low RCS Tavg
c. SG Water Level High-High (P-14)

6. Auxiliary Feedwater
   b. SG Water Level Low-Low
7. Semi-Automatic Switchover to Containment Sump
   b. Refueling Water Storage Tank (RWST) Level Low-Low

The proposed surveillance notes will add the requirement to address operability of the subject functions in the TS as discussed in TSTF-493, Revision 4, Option A. The NRC staff reviewed the list of affected TS functions and its evaluation follows.

3.2.3 Evaluation of Surveillance Notes to TS Functions

The proposed surveillance notes will ensure instrument operability will be maintained and that uncertainties will be included in the AFT calculations in an acceptable manner. By establishing the TS requirements in the surveillance notes, the licensee will ensure that there will be a reasonable expectation that these instruments will perform their safety function, if required. Therefore, the NRC staff finds the addition of the notes to be acceptable. The NRC staff further concludes that the proposed TS changes are acceptable since they meet the requirements of 10 CFR 50.36(c)(3) in that the surveillance requirements will ensure that the necessary quality of systems are maintained, that the facility will be maintained within safety limits, and the LCOs will continue to be met.

3.2.4 Evaluation of Administrative changes

The proposed change corrects a typographical error on TS Table 3.3.1-1, page 9 of 9. The heading for Note 2 is revised from "Over-temperature Delta T," to "Over-power Delta T." The portion of the Note on page 9 of 9 is a continuation of Note 2 on page 8 of 9. The NRC staff has determined that the proposed change is administrative and therefore, is acceptable.

The proposed change, also deletes an expired allowance in TS Table 3.3.2-1, Note (j). Note (j) applied to Function 7b, "Semi-automatic Switch-over to Containment Sump, Refueling Water Storage Tank (RWST) level Low-Low and stated, "Two channels may be inoperable for a limited period of time during implementation of Amendments 151 and 132 until four Required Channels have been adjusted for each unit." Note (j) is no longer applicable because Amendments 151 and 132 (ADAMS Accession No. ML080880179) have been fully implemented on VEGP Units 1 and 2. The NRC staff has determined that the proposed change is administrative and therefore, is acceptable.

As part of this LAR, VEGP is incorporating TSTF-493-A, Revision 4, Option A to the VEGP TS. These TS changes are made by the addition of individual surveillance note requirements to applicable instrument functions. Concerning TSTF-493-A modification to Table 3.3.2-1, function 5c, VEGP included the channel performance Surveillance Notes required when implementing TSTF-493-A. In particular, the second note for function 5c (Note (j)) identifies that the methodology for calculating the as-found and the as-left tolerances be specified in NMP-ES-033-006, "Vogtle Setpoint Uncertainty Methodology and Scaling Instructions." In the RAI response provided on December 9, 2011 (ADAMS Accession Nos. ML11347A350 and ML11347A349), VEGP explained that the Setpoint Methodology included in Enclosure 6 of the LAR is consistent with the methodology described in NMP-ES-033-006; in particular,

NMP-ES-033-006 Appendix A, Section A.4 and Equation 4.2 are consistent with the SRSS method of combining terms as shown in the LAR, Attachment 1.

The staff has reviewed the licensee's calculation basis for the NTSP, CSA, AFT, and ALT, for the SG Water Level High-High (P-14), and the Vogtle NMP-ES-033-006, Setpoint Methodology, and found that maintaining the more conservative NTS provides reasonable assurance that the SG Water Level-High High setpoint (P-14) (TS Table 3.3.2-1, Function 5c) will continue to perform its intended safety functions. The staff has concluded that the methodology demonstrates that the proposed setting limits are reasonable. The licensee has also defined the as-left calibration tolerance, which is based on the setting limit by taking the square-root-of-the-sum-of-the-squares of instrument uncertainties measured during testing. The staff has determined that the licensee's setpoint calculation addresses the guidance of RG 1.105, Revision 3. The licensee has stated that their surveillance procedure requires the setpoint to be returned to within the specified as-left calibration tolerance if found outside the as-left tolerance band. If the setpoint is found outside the as-found tolerance band, plant surveillance procedures require an evaluation be performed per the requirements of the corrective action program. The channel will be declared inoperable until it is repaired, replaced, or recalibrated, as needed.

Since these settings are calculated based on an acceptable methodology, they are acceptable to the NRC staff; specifically, the more conservative NTSP provides reasonable assurance that the establishment of the SG Water Level High-High setpoint (P-14) (TS Table 3.3.2-1, Function 5c) will ensure that the channel will continue to perform its intended safety functions. Based on its review of the license's calculations and justification, the staff finds the proposed TS changes acceptable.

3.3 Technical Conclusion

Based on the review of the licensee's application, the NRC staff concludes that the systems will continue to meet the requirements of GDC 13 of Appendix A of 10 CFR 50. The NRC staff also concludes that the licensee setpoint calculations are consistent with Regulatory Guide 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," methodology for the proposed TS changes and are therefore acceptable. The NRC staff further concludes that the proposed TSs changes meet the requirements of 10 CFR 50.36(c)(1)(ii)(A) and therefore, are acceptable. The addition of surveillance notes to applicable functions ensures instrument Function operability will be controlled in the TS rather than by procedures and additional uncertainties have been included in the AFT calculation in a manner that is acceptable to the NRC staff. Therefore, there is reasonable assurance of the adequate protection capabilities of this instrument channel.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may

be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (76 FR 30206). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: R. Alvarado
K. Bucholtz

Date: February 27, 2012

February 27, 2012

Mr. M. J. Ajluni
Nuclear Licensing Director
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
Post Office Box 1295, Bin - 038
Birmingham, AL 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2, ISSUANCE OF AMENDMENTS REGARDING STEAM GENERATOR WATER LEVEL HIGH-HIGH TECHNICAL SPECIFICATION, TABLE 3.3.1-1 AND TABLE 3.3.2-1 SETPOINT CHANGES (TAC NOS. ME5778 AND ME5779)

Dear Mr. Ajluni:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 165 to Renewed Facility Operating License NPF-68 and Amendment No. 147 to Renewed Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Units 1 and 2, respectively. The amendments consist of changes to the License and Technical Specifications (TSs) in response to your application dated March 3, 2011, as supplemented on August 12, 2011 and December 9, 2011.

The amendments revise TS 3.3.1, "Reactor Protection System Instrumentation" Table 3.3.1-1 and TS 3.3.2 Engineered Safety Feature Actuation System (ESFAS) Instrumentation," Table 3.3.2-1.

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/

Patrick G. Boyle, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:
1. Amendment No. 165 to NPF-68
2. Amendment No. 147 to NPF-81
3. Safety Evaluation

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NAME	PBoyle	SFigueroa	JThorp*	RElliott*	CKanatas (NLO subject to comments)	NSalgado	PBoyle
DATE	02/8/12	02/8/12	01/25/12	06/14/11	2/16/12	2/27/12	2/27/12

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