50-424/425

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

June 1, 1998

Mr. C. K. McCoy
Vice President
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: ISSUANCE OF AMENDMENTS - VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 (TAC NOS. MA0194 and MA0195)

Dear Mr. McCoy:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 101 to Facility Operating License NPF-68 and Amendment No. 79 to Facility Operating License NPF-81 for Vogtle Electric Generating Plant, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated November 20, 1997, as supplemented by letter dated April 16, 1998.

The amendments revise the TS as follows: (1) remove the inequalities applied to the "Trip Setpoint" column of TS Table 3.3.1-1, "Reactor Trip System Instrumentation" and TS Table 3.3.2-1, "Engineered Safety Feature Actuation System [ESFAS] Instrumentation" and revise the "Trip Setpoint" column to read "Nominal Trip Setpoint;" (2) add footnotes (n) and (l) to TS Tables 3.3.1-1 and 3.3.2-1, respectively, to include the criteria for channel operability, reset, and calibration tolerance about the trip setpoint. These footnotes also allow for the trip setpoint to be set more conservatively than the nominal trip setpoint value as necessary in response to plant conditions; (3) the Allowable Value for TS Table 3.3.1-1, Function 14.b, Turbine Trip - Turbine Stop Valve Closure, would be revised from "≥ 96.7% open" to "≥ 90% open;" (4) revise footnotes (l) and (m) of TS Table 3.3.1-1 to refer to "Nominal Trip Setpoint" and delete the inequalities applied to the trip setpoints; (5) delete the superscript "(a)" from the "Trip Setpoint" column on page 6 of 8 of Table 3.3.1-1; (6) revise the inequality for the ESFAS Allowable Value for Steam Line Pressure - Low (Table 3.3.2-1, Function 1.e) from "≤" to "≥;" and (7) revise associated TS Bases to reflect the above TS revisions.

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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,

David Jaffe, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:
1. Amendment No. 101 to NPF-68
2. Amendment No. 79 to NPF-81
3. Safety Evaluation

cc w/encls: See next page

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,

ORIGINAL SIGNED BY:

David Jaffe, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosures:
1. Amendment No. 101 to NPF-68
2. Amendment No. 79 to NPF-81
3. Safety Evaluation

cc w/encls: See next page

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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

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 101
License No. NPF-68

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

   A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility) Facility Operating License No. NPF-68 filed by the Southern Nuclear Operating Company, Inc. (Southern Nuclear), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated November 20, 1997, as supplemented by letter dated April 16, 1998, 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.

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

   Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A, as revised through Amendment No. 101 , 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Peter S. Tam for

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: June 1, 1998

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

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 79
License No. NPF-81

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

   A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the Southern Nuclear Operating Company, Inc. (Southern Nuclear), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated November 20, 1997, as supplemented by letter dated April 16, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

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

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

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

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

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

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 79 , 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Peter S. Tam for

Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: June 1, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 101

FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

AND

TO LICENSE AMENDMENT NO. 79

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove	Insert
3.3-14	3.3-14
3.3-15	3.3-15
3.3-16	3.3-16
3.3-17	3.3-17
3.3-18	3.3-18
3.3-19	3.3-19
3.3-20	3.3-20
3.3-21	3.3-21
3.3-30	3.3-30
3.3-31	3.3-31
3.3-32	3.3-32
3.3-33	3.3-33
3.3-34	3.3-34
3.3-35	3.3-35
3.3-36	3.3-36
B 3.3-4	B 3.3-4
B 3.3-5	B 3.3-5
B 3.3-5a	-
B 3.3-5b	-
B 3.3-7	B 3.3-7
B 3.3-7a	-
B 3.3-7b	-
B 3.3-16	B 3.3-16
B 3.3-16a	-
B 3.3-16b	-
B 3.3-18	B 3.3-18
B 3.3-18a	-

Remove	Insert
B 3.3-18b	-
B 3.3-60	B 3.3-60
B 3.3-63	B 3.3-63
B 3.3-66	B 3.3-66
B 3.3-66a	-
B 3.3-66b	-
B 3.3-109	B 3.3-109
B 3.3-109a	-
B 3.3-109b	-

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

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT[(n)]
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 SR 3.3.1.11 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 SR 3.3.1.11 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 SR 3.3.1.11	≤ 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 SR 3.3.1.11	≤ 31.1% RTP	25% RTP
	2[(d)]	2	H	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11	≤ 31.1% 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 2 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT(n)
5. Source Range Neutron Flux	2(d)	2	I,J	SR 3.3.1.1 SR 3.3.1.8 SR 3.3.1.11 SR 3.3.1.15	≤ 1.4 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 SR 3.3.1.11 SR 3.3.1.15	≤ 1.4 E5 cps	1.0 E5 cps
	3(e), 4(e), 5(e)	1	L	SR 3.3.1.1 SR 3.3.1.11	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 SR 3.3.1.10 SR 3.3.1.15	Refer to Note 1 (Page 3.3-20)	Refer to Note 1 (Page 3.3-20)
7. Overpower ΔT	1,2	4	E	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 SR 3.3.1.15	Refer to Note 2 (Page 3.3-21)	Refer to Note 2 (Page 3.3-21)

(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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 3 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT$^{(n)}$
8. Pressurizer Pressure						
a. Low	$1^{(f)}$	4	M	SR 3.3.1.1 SR 3.3.1.7 SR 3.3.1.10 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 SR 3.3.1.10 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 SR 3.3.1.10	≤ 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 SR 3.3.1.10 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 SR 3.3.1.10 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 4 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT(n)
11. Undervoltage RCPs	1(f)	2 per bus	M	SR 3.3.1.9 SR 3.3.1.10 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 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 SR 3.3.1.10 SR 3.3.1.15	≥ 35.9%	37.8%

(continued)

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

(n) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 5 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT(n)
14. Turbine Trip						
a. Low Fluid Oil Pressure	1(j)	3	O	SR 3.3.1.10 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	≥ 6E-11 amp	1E-10 amp
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	≤ 52.3% RTP	50% 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 6 of 8)
Reactor Trip System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT(n)
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.

(n) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

Table 3.3.1-1 (page 7 of 8)
Reactor Trip System Instrumentation

Note 1: Overtemperature Delta-T

The Overtemperature Delta-T Function Allowable Value shall not exceed the Nominal Trip Setpoint defined by the following equation by more than 2.25% of RTP.

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

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: $\tau_1 \ge 8$ seconds, $\tau_2 \le 3$ seconds
	$\frac{1}{1+\tau_3 s}$	lag compensator on measured differential temperature
	τ_3	time constant utilized in lag compensator for differential temperature, ≤ 2 seconds
	K_1	fundamental setpoint, ≤112% 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, = 0 seconds
	T'	indicated loop specific RCS average temperature at RTP, ≤ 588.4 degrees F
	K_3	modifier for pressure, = 0.115% RTP per psig
	P	measured RCS pressurizer pressure, psig
	P'	reference pressure, ≥ 2235 psig
	s	Laplace transform variable, inverse seconds
	f_1(AFD)	modifier for Axial Flux Difference (AFD):

1. for AFD between -32% and +10%, = 0% RTP
2. for each % AFD is below -32%, the trip setpoint shall be reduced by 3.25% RTP
3. for each % AFD is above +10%, the trip setpoint shall be reduced by 2.7% RTP

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

Note 2: Overpower Delta-T

The Overpower Delta-T Function ALLOWABLE VALUE shall not exceed the Nominal Trip Setpoint defined by the following equation by more than 2.85% of RTP.

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

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: $\tau_1 \ge 8$ seconds, $\tau \le 3$ seconds
	$\frac{1}{1+\tau_3 s}$	lag compensator on measured differential temperature
	τ_3	time constant utilized in lag compensator for differential temperature, ≤ 2 seconds
	K_4	fundamental setpoint, ≤109.5% 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
	τ_6	time constant utilized in lag compensator for average temperature, = 0 seconds
	K_6	modifier for temperature: ≥ 0.20% 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[(i)]
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 SR 3.3.2.7 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 SR 3.3.2.7 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 SR 3.3.2.7 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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 SR 3.3.2.7 SR 3.3.2.8	≤ 22.4 psig	21.5 psig

(continued)

(i) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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.

(i) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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 SR 3.3.2.7 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 SR 3.3.2.7 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 SR 3.3.2.7 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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 Tavg	1,2(f)	4	I	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7	≥ 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 SR 3.3.2.7 SR 3.3.2.8	≤ 87.9%	86.0%
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 SR 3.3.2.7 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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	1,2,3,4	4	K	SR 3.3.2.1 SR 3.3.2.4 SR 3.3.2.7 SR 3.3.2.8	≥ 264.9 in.	275.3 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) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

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(i)
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

(i) A channel is OPERABLE with an actual Trip Setpoint value outside its calibration tolerance band provided the Trip Setpoint value is conservative with respect to its associated Allowable Value and the channel is re-adjusted to within the established calibration tolerance band of the Nominal Trip Setpoint. A Trip Setpoint may be set more conservative than the Nominal Trip Setpoint as necessary in response to plant conditions.

BASES

BACKGROUND

Signal Process Control and Protection System (continued)

the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation. These requirements are described in IEEE-279-1971 (Ref. 4). The actual number of channels required for each unit parameter is specified in Reference 1.

Two logic channels are required to ensure no single random failure of a logic channel will disable the RTS. The logic channels are designed such that testing required while the reactor is at power may be accomplished without causing trip. Provisions to allow removing logic channels from service during maintenance are unnecessary because of the logic system's designed reliability.

Trip Setpoints and Allowable Values

The Trip Setpoints are the nominal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION tolerance.

The Trip Setpoints used in the bistables are based on the analytical limits stated in Reference 1. The selection of these Trip Setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those RTS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Trip Setpoints and Allowable Values specified in Table 3.3.1-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. A detailed description of the methodology used to calculate the Trip Setpoints, including their explicit uncertainties, is provided in the "RTS/ESFAS Setpoint Methodology Study" (Ref. 6). The actual nominal Trip Setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a COT. One example of such a change in measurement error is drift during the surveillance interval.

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BASES

BACKGROUND

Trip Setpoints and Allowable Values (continued)

If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

Setpoints in accordance with the Allowable Value ensure that SLs are not violated during AOOs (and that the consequences of DBAs will be acceptable, providing the unit is operated from within the LCOs at the onset of the AOO or DBA and the equipment functions as designed). For the purpose of demonstrating compliance with 10 CFR 50.36 to the extent that the Technical Specifications are required to specify Limiting Safety System Settings (LSSS), the LSSS for VEGP are comprised of both the Nominal Trip Setpoints and the Allowable Values specified in Table 3.3.1-1. The Nominal Trip Setpoint is the expected value to be achieved during calibrations. The Nominal Trip Setpoint considers all factors which may affect channel performance by statistically combining rack drift, rack measurement and test equipment effects, rack calibration accuracy, rack comparator setting accuracy, rack temperature effects, sensor measurement and test equipment effects, sensor calibration accuracy, primary element accuracy, and process measurement accuracy. The Nominal Trip Setpoint is the value that will always ensure that safety analysis limits are met (with margin) given all of the above effects. The Allowable Value has been established by considering the values assumed for rack effects only. The Allowable Value serves as an operability limit for the purpose of the quarterly CHANNEL OPERATIONAL TESTS.

Each channel of the process control equipment can be tested on line to verify that the signal or setpoint accuracy is within the specified allowance requirements of Reference 2. Once a designated channel is taken out of service for testing, a simulated signal is injected in place of the field instrument signal. The process equipment for the channel in test is then tested, verified, and calibrated. SRs for the channels are specified in the SRs section.

The Trip Setpoints and Allowable Values listed in Table 3.3.1-1 are based on the methodology described in Reference 6, which incorporates all of the known uncertainties applicable for each channel. The magnitudes of these uncertainties are factored into the determination of each Trip Setpoint. All field sensors and signal

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BASES

BACKGROUND

Trip Setpoints and Allowable Values (continued)

processing equipment for these channels are assumed to operate within the allowances of these uncertainty magnitudes.

Solid State Protection System

The SSPS equipment is used for the decision logic processing of outputs from the signal processing equipment bistables. To meet the redundancy requirements, two trains of SSPS, each performing the same functions, are provided. If one train is taken out of service for maintenance or test purposes, the second train will provide reactor trip and/or ESF actuation for the unit. If both trains are taken out of service or placed in test, a reactor trip will result. Each train is packaged in its own cabinet for physical and electrical separation to satisfy separation and independence

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BASES

BACKGROUND

Reactor Trip Switchgear (continued)

trip mechanism is sufficient by itself, thus providing a diverse trip mechanism.

The decision logic matrix Functions are described in the functional diagrams included in Reference 1. In addition to the reactor trip or ESF, these diagrams also describe the various "permissive interlocks" that are associated with unit conditions. Each train has a built in testing device that can automatically test the decision logic matrix Functions and the actuation devices while the unit is at power. When any one train is taken out of service for testing, the other train is capable of providing unit monitoring and protection until the testing has been completed. The testing device is semiautomatic to minimize testing time.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The RTS functions to maintain the SLs during all AOOs and mitigates the consequences of DBAs in all MODES in LCO, and which the RTBs are closed.

Each of the analyzed accidents and transients can be detected by one or more RTS Functions. The accident analysis described in Reference 3 takes credit for most RTS trip Functions. RTS trip Functions not specifically credited in the accident analysis are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These RTS trip Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. They may also serve as backups to RTS trip Functions that were credited in the accident analysis.

The LCO requires all instrumentation performing an RTS Function, listed in Table 3.3.1-1 in the accompanying LCO, to be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. The Nominal Trip Setpoint column is modified by a Note that requires the as-left condition for a channel to be within the calibration tolerance for that channel. In addition, the as-left condition may be more conservative than the specified Nominal Trip Setpoint.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY (continued)

The conservative direction is established by the direction of the inequality applied to the Allowable Value. It is consistent with the setpoint methodology for the as-left trip setpoint to be outside the calibration tolerance but in the conservative direction with respect to the Nominal Trip Setpoint. For example, the Power Range Neutron Flux High trip setpoint may be set to a value less than 109% during initial startup following a refueling outage until a sufficiently high reactor power is achieved so that the power range channels may be calibrated. In addition, certain Required Actions may require that the Power Range Neutron Flux High trip setpoints and/or the Overpower Delta-T setpoints be reduced based on plant conditions.

The LCO generally requires OPERABILITY of four or three channels in each instrumentation Function, two channels of Manual Reactor Trip in each logic Function, and two trains in each Automatic Trip Logic Function. Four OPERABLE

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

6. Overtemperature ΔT (continued)

This results in a two-out-of-four trip logic. Section 7.2.2.3 of Reference 1 discusses control and protection system interactions for this function. Note that this Function also provides a signal to generate a turbine runback prior to reaching the Trip Setpoint. A turbine runback will reduce turbine power and reactor power. A reduction in power will normally alleviate the Overtemperature ΔT condition and may prevent a reactor trip.

Delta-T_0, as used in the overtemperature and overpower ΔT trips, represents the 100% RTP value as measured for each loop. This normalizes each loop's ΔT trips to the actual operating conditions existing at the time of measurement, thus forcing the trip to reflect the equivalent full power conditions as assumed in the accident analyses. These differences in RCS loop ΔT can be due to several factors, e.g., differences in RCS loop flows and slightly asymmetric power distributions between quadrants. While RCS loop flows are not expected to change with cycle life, radial power redistribution between quadrants may occur, resulting in small changes in loop specific ΔT values. Therefore, loop specific ΔT_0 values are measured as needed to ensure they represent actual core conditions.

The parameter K_1 is the principal setpoint gain, since it defines the function offset. The parameters K_2 and K_3 define the temperature gain and pressure gain, respectively. The values for T' and P'are key reference parameters corresponding directly to plant safety analyses initial conditions assumptions for the Overtemperature ΔT function. For the purposes of performing a CHANNEL CALIBRATION, the values for K_1, K_2, K_3, T', and P' are utilized in the safety analyses without explicit tolerances, but should be considered as nominal values for instrument settings. That is, while an exact setting is not expected, a setting as close as reasonably possible is desired. Note that for T', the value for the hottest RCS loop will be set

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

6. Overtemperature ΔT (continued)

as close as possible to 588.4°F. The value of T' for the remaining RCS loops will be set appropriately less than 588.4°F based on the actual loop specific indicated T_{avg}. The engineering scaling calculations use each of the referenced parameters as an exact gain or reference value. Tolerances are not applied to the individual gain or reference parameters. Tolerances are applied to each calibration module and the overall string calibration. In order to ensure that the Overtemperature ΔT setpoint is consistent with the assumptions of the safety analyses, it is necessary to verify during the CHANNEL OPERATIONAL TEST that the Overtemperature ΔT setpoint is within the appropriate calibration tolerances for the defined calibration conditions (Ref. 9).

The LCO requires all four channels of the Overtemperature ΔT trip Function to be OPERABLE. Note that the Overtemperature ΔT Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

In MODE 1 or 2, the Overtemperature ΔT trip must be OPERABLE to prevent DNB. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about DNB.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

7. Overpower ΔT (continued)

Delta-T_0, as used in the overtemperature and overpower ΔT trips, represents the 100% RTP value as measured for each loop. This normalizes each loop's ΔT trips to the actual operating conditions existing at the time of measurement, thus forcing the trip to reflect the equivalent full power conditions as assumed in the accident analyses. These differences in RCS loop ΔT can be due to several factors, e.g., difference in RCS loop flows and slightly asymmetric power distributions between quadrants. While RCS loop flows are not expected to change with cycle life, radial power redistribution between quadrants may occur, resulting in small changes in loop specific ΔT values. Therefore, loop specific ΔT_0 values are measured as needed to ensure they represent actual core conditions.

The value for T" is a key reference parameter corresponding directly to plant safety analyses initial conditions assumptions for the Overpower ΔT function. For the purposes of performing a CHANNEL CALIBRATION, the values for K_4, K_5, K_6, and T" are utilized in the safety analyses without explicit tolerances, but should be considered as nominal values for instrument settings. That is, while an exact setting is not expected, a setting as close as reasonably possible is desired. Note that for T", the value for the hottest RCS loop will be set as close as possible to 588.4°F. The value of T" for the remaining RCS loops will be set appropriately less than 588.4°F based on the actual loop specific indicated T_{avg}. The engineering scaling calculations use each of the referenced parameters as an exact gain or reference value. Tolerances are not applied to the individual gain or reference parameters. Tolerances are applied to each calibration module and the overall string calibration. In order to ensure that the Overpower ΔT setpoint is consistent with the assumptions of the safety analyses, it is necessary to verify during the CHANNEL OPERATIONAL TEST that the Overpower ΔT setpoint is within the appropriate calibration tolerances for defined calibration conditions (Ref. 9). Note that for the parameter K_5,

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

7. Overpower ΔT (continued)

in the case of decreasing temperature, the gain setting must be ≥ 0 to prevent generating setpoint margin on decreasing temperature rates. Similarly, the setting for K_6 is required to be equal to 0 for conditions where T ≤ T".

The LCO requires four channels of the Overpower ΔT trip Function to be OPERABLE. Note that the Overpower ΔT trip Function receives input from channels shared with other RTS Functions. Failures that affect multiple Functions require entry into the Conditions applicable to all affected Functions.

In MODE 1 or 2, the Overpower ΔT trip Function must be OPERABLE. These are the only times that enough heat is generated in the fuel to be concerned about the heat generation rates and overheating of the fuel. In MODE 3, 4, 5, or 6, this trip Function does not have to be OPERABLE because the reactor is not operating and there is insufficient heat production to be concerned about fuel overheating and fuel damage.

8. Pressurizer Pressure

The same sensors (PI-0455A, B, & C, PI-0456, PI-0456A, PI-0457, PI-0457A, PI-0458, PI-0458A) provide input to the Pressurizer Pressure — High and — Low trips and the Overtemperature ΔT trip. Since the Pressurizer Pressure channels are also used to provide input to the Pressurizer Pressure Control System, the actuation logic must be able to withstand an input failure to

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BASES

REFERENCES (continued)

2. FSAR, Chapter 6.
3. FSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. WCAP-11269, Westinghouse Setpoint Methodology for Protection Systems; as supplemented by:
   - Amendments 34 (Unit 1) and 14 (Unit 2), RTS Steam Generator Water Level — Low Low, ESFAS Turbine Trip and Feedwater Isolation SG Water Level — High High, and ESFAS AFW SG Water Level — Low Low.
   - Amendments 48 and 49 (Unit 1) and Amendments 27 and 28 (Unit 2), deletion of RTS Power Range Neutron Flux High Negative Rate Trip.
   - Amendments 60 (Unit 1) and 39 (Unit 2), RTS Overtemperature ΔT setpoint revision.
   - Amendments 57 (Unit 1) and 36 (Unit 2), RTS Overtemperature and Overpower ΔT time constants and Overtemperature ΔT setpoint.
   - Amendments 43 and 44 (Unit 1) and 23 and 24 (Unit 2), revised Overtemperature and Overpower ΔT trip setpoints and allowable values.
7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.
8. FSAR, Chapter 16.
9. Westinghouse Letter GP-16696, November 5, 1997.

BASES

BACKGROUND

Signal Processing Equipment (continued)

Generally, if a parameter is used for input to the SSPS and a control function, four channels with a two-out-of-four logic are sufficient to provide the required reliability and redundancy. The circuit must be able to withstand both an input failure to the control system, which may then require the protection function actuation, and a single failure in the other channels providing the protection function actuation. Again, a single failure will neither cause nor prevent the protection function actuation.

These requirements are described in IEEE-279-1971 (Ref. 4). The actual number of channels required for each unit parameter is specified in Reference 2.

Trip Setpoints and Allowable Values

The Trip Setpoints are the nominal values at which the bistables are set. Any bistable is considered to be properly adjusted when the "as left" value is within the band for CHANNEL CALIBRATION tolerance.

The Trip Setpoints used in the bistables are based on the analytical limits stated in Reference 2. The selection of these Trip Setpoints is such that adequate protection is provided when all sensor and processing time delays are taken into account. To allow for calibration tolerances, instrumentation uncertainties, instrument drift, and severe environment errors for those ESFAS channels that must function in harsh environments as defined by 10 CFR 50.49 (Ref. 5), the Trip Setpoints and Allowable Values specified in Table 3.3.2-1 in the accompanying LCO are conservatively adjusted with respect to the analytical limits. The actual nominal Trip Setpoint entered into the bistable is more conservative than that specified by the Allowable Value to account for changes in random measurement errors detectable by a COT. One example of such a change in measurement error is drift during the surveillance interval. If the measured setpoint does not exceed the Allowable Value, the bistable is considered OPERABLE.

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BASES

BACKGROUND

Sequencer Output Relays (continued)

sequencer and are part of the control circuitry of these ESF loads. There are two independent trains of sequencers and each is powered by the respective train of 120-Vac ESF electrical power supply. The power supply for the output relays is the sequencer power supply. The applicable output relays are tested in the slave relay testing procedures, and in particular, in conjunction with the specific slave relay also required to actuate to energize the applicable ESF load.

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY

Each of the analyzed accidents can be detected by one or more ESFAS Functions. One of the ESFAS Functions is the primary actuation signal for that accident. An ESFAS Function may be the primary actuation signal for more than one type of accident. An ESFAS Function may also be a secondary, or backup, actuation signal for one or more other accidents. For example, Pressurizer Pressure — Low is a primary actuation signal for small loss of coolant accidents (LOCAs) and a backup actuation signal for steam line breaks (SLBs) outside containment. Functions such as manual initiation, not specifically credited in the accident safety analysis, are qualitatively credited in the safety analysis and the NRC staff approved licensing basis for the unit. These Functions may provide protection for conditions that do not require dynamic transient analysis to demonstrate Function performance. These Functions may also serve as backups to Functions that were credited in the accident analysis (Ref. 3).

The LCO requires all instrumentation performing an ESFAS Function to be OPERABLE. Failure of any instrument renders the affected channel(s) inoperable and reduces the reliability of the affected Functions. The Nominal Trip Setpoint column is modified by a Note that requires the as-left conditions for a channel to be within the calibration tolerance for that channel. In addition, the as-left condition may be more conservative than the specified Nominal Trip Setpoint. The conservative direction is established by the direction of the inequality applied to the Allowable Value. It is consistent with the setpoint methodology for the as-left trip setpoint to be outside the calibration tolerance but in the conservative direction with respect to the Nominal Trip Setpoint.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, AND APPLICABILITY (continued)

The LCO generally requires OPERABILITY of four or three channels in each instrumentation function and two channels in each logic and manual initiation function. The two-out-of-three and the two-out-of-four configurations allow one channel to be tripped during maintenance or testing without causing an ESFAS initiation. If an instrument channel is equipped with installed bypass capability, such that no jumpers or lifted leads are

(continued)

BASES

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.8 (continued)

verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 900 psig in the SGs.

SR 3.3.2.9

SR 3.3.2.9 is the performance of a TADOT as described in SR 3.3.2.6 for the P-4 Reactor Trip Interlock, and the Frequency is once per 18 months. This Frequency is based on operating experience. The SR is modified by a note that excludes verification of setpoints during the TADOT. The function tested has no associated setpoint.

REFERENCES

1. FSAR, Chapter 6.
2. FSAR, Chapter 7.
3. FSAR, Chapter 15.
4. IEEE-279-1971.
5. 10 CFR 50.49.
6. WCAP-11269, Westinghouse Setpoint Methodology for Protection Systems; as supplemented by:
    - Amendments 38 (Unit 1) and 18 (Unit 2), ESFAS Safety Injection Pressurizer — Low allowable value revision.
    - Amendments 34 (Unit 1) and 14 (Unit 2), RTS Steam Generator Water Level — Low Low, ESFAS Turbine Trip and Feedwater Isolation SG Water Level — High High, and ESFAS AFW SG Water Level — Low Low.

(continued)

BASES

REFERENCES (continued)

- Amendments 43 and 44 (Unit 1) and 23 and 24 (Unit 2), revised ESFAS Interlocks Pressurizer P-11 trip setpoint and allowable value.

7. WCAP-10271-P-A, Supplement 2, Rev. 1, June 1990.

8. FSAR, Chapter 16.

9. Westinghouse Letter GP-16696, November 5, 1997.

BASES

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 101 TO FACILITY OPERATING LICENSE NPF-68

AND AMENDMENT NO. 79 TO FACILITY OPERATING LICENSE NPF-81

SOUTHERN NUCLEAR OPERATING COMPANY, INC., ET AL.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By letter dated November 20, 1997, as supplemented by letter dated April 16, 1998, Southern Nuclear Operating Company Inc., et al. (SNC/the licensee), proposed license amendments to change the Technical Specifications (TS) for Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. The proposed amendments would revise the TS as follows: (1) remove the inequalities applied to the "Trip Setpoint" column of TS Table 3.3.1-1, "Reactor Trip System Instrumentation" and TS Table 3.3.2-1, "Engineered Safety Feature Actuation System [ESFAS] Instrumentation" and revise the "Trip Setpoint" column to read "Nominal Trip Setpoint;" (2) add footnotes (n) and (i) to TS Tables 3.3.1-1 and 3.3.2-1, respectively, to include the criteria for channel operability, reset, and calibration tolerance about the trip setpoint. These footnotes also allow for the trip setpoint to be set more conservatively than the nominal trip setpoint value as necessary in response to plant conditions; (3) the Allowable Value for TS Table 3.3.1-1, Function 14.b, Turbine Trip - Turbine Stop Valve Closure, would be revised from "≥ 96.7% open" to "≥ 90% open;" (4) revise footnotes (l) and (m) of TS Table 3.3.1-1 to refer to "Nominal Trip Setpoint" and delete the inequalities applied to the trip setpoints; (5) delete the superscript "(a)" from the "Trip Setpoint" column on page 6 of 8 of Table 3.3.1-1; (6) revise the inequality for the ESFAS Allowable Value for Steam Line Pressure - Low (Table 3.3.2-1, Function 1.e) from "≤" to "≥;" and (7) revise associated TS Bases to reflect the above TS revisions.

The supplement dated April 16, 1998, provided clarifying information that did not change the scope of the November 20, 1997, application and the initial proposed no significant hazards determination.

2.0 BACKGROUND

The NRC staff evaluated the licensee's practice of establishing reactor trip system (RTS) and Engineered Safety Feature Actuation System (ESFAS) instrument setpoints for Vogtle Units 1 and 2 as nominal values with tolerances beyond maximum and minimum (inequalities) trip setpoint values shown in the TS. The evaluation was initiated as a follow-up of generic concerns identified during NRC inspections at Watts Bar and Sequoyah nuclear plants that have similar RTS and ESFAS TS. The inspectors concluded that the existing

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practices of setting the Trip Setpoints (TSPs) in a manner inconsistent with the Improved Technical Specifications (ITS) TSP inequalities would render the instrument inoperable based on the ITS surveillance requirements, Limiting Conditions for Operation (LCOs), and Actions/Conditions. The inequalities on the ITS TSPs were being interpreted as limits that, when exceeded, would require entry into the appropriate LCO remedial action.

The staff concluded that SNC provided an acceptable solution to the Watts Bar operability issue based on its practice of setting the TSPs consistent with the TS TSP inequality value. However, the staff also noted that the Vogtle Bases and setpoint methodology were not consistent in their application of the limiting safety system settings (LSSSs). The staff also noted that the Westinghouse ITS dual column format did not fully fit a "Nominal Trip Setpoint," "calibration tolerance," or "reset action" as described in the Vogtle setpoint methodology or TS Bases. SNC resolved these apparent discrepancies by administratively controlling the TSP value consistent with the Vogtle ITS inequalities and, therefore, addressed the ITS operability concerns raised at Watts Bar.

Although the staff accepted the approach taken by the licensee, the licensee has chosen to revise the Vogtle ITS to adopt the term "Nominal Trip Setpoint" and to allow a calibration tolerance band (lower and upper bands) around the TSP value. This approach is consistent with the licensee's setpoint methodology and previous revisions to the ITS.

3.0 EVALUATION

The NRC staff's evaluation of the licensee's proposed changes to the TS are evaluated in the following sections.

3.1 Remove Inequalities

Remove the inequalities applied to the "Trip Setpoint" column of TS Table 3.3.1-1, "Reactor Trip System Instrumentation" and TS Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation" and revise the "Trip Setpoint" column to read "Nominal Trip Setpoint."

The licensee proposed to delete the inequalities as applied to the "Trip Setpoint" column of TS Tables 3.3.1-1 and 3.3.2-1. The licensee also proposed to revise the "Trip Setpoint" column to read "Nominal Trip Setpoint." The licensee also proposed to revise Notes 1 and 2 in TS Table 3.3.1-1, "Overtemperature Delta-T (OTΔT)" and "Overpower Delta-T (OPΔT)", respectively, to reference "Nominal Trip Setpoint." The proposed change is consistent with the licensee's setpoint methodology (calibration tolerance) and is, therefore, acceptable. A revision to the Bases, "APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY" Section 6, "Overtemperature ΔT" is also proposed by the licensee to document its practice of scaling the channels with the gains and reference values distributed across multiple channel modules. The licensee stated that because of the configuration of the rack equipment and its current calibration practice, the specific direction of conservatism for the gains and reference values as stated for the OTΔT and OPΔT TSP equations cannot be applied individually as noted in TS Table 3.3.1-1, Notes 1 and 2, and in the Westinghouse letter dated November 5, 1997, GP-16696.

The licensee stated that the channel calibration for OTΔT and OPΔT gains and reference values are set as close to the desired value as possible. In practice, the licensee confirms that the calibration tolerance is met for each individual parameter. Additionally, the combination of reference values and gains is verified to be conservative with the overall calibration of the channel set as close as reasonably expected to the overall value, i.e., within the nominal trip setpoint and associated calibration tolerance.

For the purposes of a channel calibration, the licensee stated that the gains and reference values (K_1, K_2, K_3, K_4, K_5, K_6, T′, P′, and T″) are used in the safety analyses without explicit inequalities applied (as shown in TS Table 3.3.1-1, Notes 1 and 2) and should be considered nominal values in the TS for instrument settings. The staff considered the licensee's position, but notes that the gains, reference values, and the nominal trip setpoint for OTΔT and OPΔT must be set consistent with the assumptions of the safety analysis, i.e., conservative or bounding to the safety analysis assumptions.

The licensee stated that the uncertainty calculations assume that the "as left" tolerance (conservative and nonconservative direction) is satisfied on a reasonable, statistical basis, not that the nominal condition is satisfied exactly. It is acceptable for the "as left" condition, immediately after calibration of process rack modules or the bistable, to be in the non-conservative direction, as long as the magnitude is within the calibration tolerance specified in the plant procedure (which has been appropriately reflected in the protection of actuation function specific uncertainty calculation). The limits are defined by the plant calibration procedures and reflected in the uncertainty calculations. In addition, for the purposes of channel calibration, the values specified in Notes 1 and 2 in Table 3.3.1-1 for K_1, K_2, K_3, K_4, K_5, K_6, T′, T″, and P′ are utilized in the safety analyses without explicit tolerances, but should be considered as nominal values for instrument settings. That is, although an exact setting is not expected, a setting as close as reasonably possible is desired.

In response to a request for additional information, the licensee submitted a table with 14 transient and accident trips related to the OTΔT and OPΔT trips, both for primary and backup trips. The licensee stated that the proposed change does not affect any of the safety analyses or change the safety analyses results in a nonconservative manner. As long as the calibration accuracy values of the uncertainty calculations are satisfied in the plant, via the scaling calculations and the plant calibration procedures, the trip will arrive at or before the safety analysis limit assumed in the safety analyses.

The NRC staff considers the TS inequalities for TS Table 3.3.1-1, Notes 1 and 2, appropriate to ensure that the gains and reference values remain conservative and satisfy the assumptions made in the development of the setpoint equations and safety analysis. The NRC staff also considers that the removal of the inequalities from the TSP values, as assigned to TS Tables 3.3.1-1 and 3.3.2-1, is consistent with the licensee's setpoint methodology and the ITS as revised by the NRC staff. The removal of the inequality from the TSP values, and the redesignation of the TSP as Nominal Trip Setpoint will allow the licensee to set the trip setpoint value consistent with the two-sided calibration tolerance defined in the setpoint methodology. Therefore, these changes are acceptable to the NRC staff.

3.2 Add Footnotes

Add footnotes (n) and (i) to TS Tables 3.3.1-1 and 3.3.2-1, respectively, to include criteria for channel operability, reset, and calibration tolerance about the trip setpoint.

The licensee provided additional footnotes (n) and (i) to TS Tables 3.3.1-1 and 3.3.2-1, respectively, to provide a readjustment (reset) function with respect to the nominal trip setpoint. The proposed footnotes allow for a channel to be considered operable with a nominal trip setpoint found outside its calibration tolerance band, provided that the TSP value is conservative with respect to its allowable value and is readjusted to within the established calibration tolerance band of the nominal trip setpoint. The staff understands the calibration tolerance band to comprise both Rack Calibration Accuracy and Comparator Setting Accuracy uncertainty terms as documented in WCAP-11269, Item 7, "Rack Allowable Deviation."

The licensee noted that with the inequalities removed, there are limited means within the TS to allow adjustment of a TSP value for varying plant conditions. The licensee addressed this with an addition to footnotes (n) and (i) to allow the TSP value to be set in the conservative direction with respect to the nominal trip setpoint as required by plant conditions. The staff finds that the proposed note agrees with the licensee's setpoint methodology and Instrument Society of America Standard 67.04-1982, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants," as endorsed in Regulatory Guide 1.105, Rev. 2, "Instrumentation Setpoints for Safety-Related Systems." Therefore, the preceding footnotes are acceptable to the NRC staff. The licensee also added inserts to TS Bases pages B 3.3-7 and B 3.3-66 to address new footnotes (n) and (i) that discuss calibration tolerance and setting the TSP conservative with respect to the nominal trip setpoint when dictated by plant conditions. The NRC staff finds that the proposed TS Bases note is consistent with the licensee's proposed TS revision and is also acceptable.

3.3 Revise Allowable Value

The Allowable Value for TS Table 3.3.1-1, Function 14.b, "Turbine Trip - Turbine Stop Valve Closure", would be revised from "≥ 96.7% open" to "≥ 90% open."

The licensee has proposed to revise the Allowable Value for TS Table 3.3.1-1, Function 14.b, "Turbine Trip - Turbine Stop Valve Closure" from "≥ 96.7% open" to "≥ 90% open." The licensee proposed this change to accommodate the removal of the TSP inequality since both the TSP and Allowable Value are identical in the TS. The licensee stated that Function 14.b of Table 3.3.1-,1 Turbine Trip - Turbine Stop Valve Closure, is a special case in that this trip function is implemented by valve-mounted limit switches. These trip circuits do not have analog channels, and therefore, standard analog calibration tolerances do not apply. The licensee's calculation determined that with the limit switches properly mounted, each switch will indicate "tripped" with its associated stop valve at 96.7 percent (or greater) open.

The licensee stated that the change to the Allowable Value for Table 3.3.1-1, Function 14.b, Turbine Trip - Turbine Stop Valve Closure, is necessitated by the fact that the current TS

Allowable Value is the same as the Trip Setpoint (i.e., both are specified as "open"). Simply deleting the inequality from the trip setpoints does not achieve the desired effect for this one function because there is no margin specified in the Allowable Value. Detecting turbine stop valve closure provides the reactor trip system logic with an indication that the turbine is tripping and steam load will soon be unavailable. The stop valves are not designed to modulate steam flow, but rather to be fully open during normal operation and fully closed following turbine trip and/or shutdown. Any indication, therefore, other than fully open, will provide the reactor trip system with indication that the turbine is tripping. An allowable value of 90 percent is also consistent with online testing performed for the main steam isolation valves (MSIVs). The MSIVs are allowed to close to 90 percent open during online testing. A valve position below 90 percent open is considered to indicate imminent valve closure. Since the turbine stop valves operate similarly (either fully open or fully closed), an allowable value of ≥ 90 percent open is adequate to provide trip indication to the reactor trip system. Finally, reactor trip on turbine stop valve closure is an anticipatory trip. It is not credited in the accident analyses.

In response to a request for information on the list of Vogtle Final Safety Analysis Report (FSAR), Chapter 15 accidents analyses that relate to the Function 14.b and the impact on these accidents from the proposed revision, the licensee stated that the reactor trip on turbine trip is an anticipatory trip and no credit is taken for it in any Chapter 15 accident analyses. The proposed TS change, therefore, has no impact on the accidents described in the Vogtle FSAR, Chapter 15.

The licensee also stated that the turbine stop valves are not designed for modulating service (as opposed to the turbine control valves). The stop valves are fully open when the turbine is in operation and are fully closed when the turbine is tripped. When the turbine is tripped, stop valves close in less than 1 minute. Since the stop valves are designed to fully close once tripped, any indication that the valve is no longer fully open is sufficient to determine trip status. Reactor trip on turbine trip is an anticipatory trip and should be developed as soon as there is clear indication that the turbine is tripping. Because the stop valves close so quickly, any indication near the fully open position (such as 90 percent open) provides sufficient assurance that the stop valve is moving to the closed position.

Because the turbine stop valves are either fully open or fully closed during normal operation, an Allowable Value of "≥ 90% open" is acceptable to the staff to provide a trip indication to the reactor protection system. The licensee states that this is consistent with current testing of the main steam lines that also use a 90 percent open indication during online testing. This TS change is, therefore, acceptable.

3.4 Revised Footnotes

Revise footnotes (l) and (m) of TS Table 3.3.1-1 to refer to "Nominal Trip Setpoint" and delete the inequalities applied in the trip setpoints.

The licensee has proposed a revision to footnotes (l) and (m) of TS Table 3.3.1-1 to change "Trip Setpoint" to "Nominal Trip Setpoint" and to delete the inequalities as shown in the footnotes. These changes are consistent with the licensee's setpoint methodology and are acceptable.

3.5 Delete Superscript

Delete the superscript "(a)" from the "Trip Setpoint" column on page 6 of 8 of Table 3.3.1-1.

The licensee has proposed that superscript "(a)" should be deleted from the heading of the "Trip Setpoint" column on page 6 of 8 of TS Table 3.3.1-1 as this superscript is no longer applicable. This is considered an editorial change by the NRC staff and is acceptable.

3.6 Revised Inequality

Revise the inequality for ESFAS Allowable Value for Steam Line Pressure - Low (Table 3.3.2-1, Function 1.e) from "≤" to "≥."

The licensee stated that the inequality applied to the ESFAS Allowable Value for Steam Line Pressure - Low (TS Table 3.3.2-1, Function 1.e) and should be changed from "≤" to "≥." This change corrects a typographical error and is, therefore, acceptable to the NRC staff.

3.7 Revise the Associated TS Bases

The licensee also proposed revisions to the TS Bases page B 3.3-5 that include the designation that the LSSSs comprise both the Nominal Trip Setpoint and Allowable Value for demonstrating compliance with the requirements of 10 CFR 50.36, "Technical Specifications." The licensee stated that the nominal trip setpoint is the expected value to be achieved during calibration (acceptable "as-left" condition), includes all uncertainty terms, and ensures that the safety analysis limits are met with respect to the uncertainty terms assigned. The licensee stated that the allowable value is established in consideration of instrument "rack" uncertainty effects only. The licensee stated that the Allowable Value serves as the operability limit during performance of the quarterly Channel Operational Tests and considers only those uncertainty terms under test. The staff finds the licensee's assignment of the LSSS to be consistent with the licensee's setpoint methodology and ISA Standard 67.04-1982 as endorsed in Regulatory Guide 1.105, Rev. 2. This designation of the LSSS as comprising both the Nominal Trip Setpoint and Allowable Value is acceptable to the NRC staff.

The licensee also proposed to revise the term "Channel Calibration Accuracy" included in TS Bases Section, "Trip Setpoints and Allowable Values," pages B 3.3-4 and B 3.3-63, to read "Channel Calibration Tolerance." Additionally, a redundant sentence was removed concerning the licensee's setpoint methodology as specified in Bases Reference 6. These changes are acceptable to the NRC staff.

The proposed insert to the Bases, including Reference 9 for OTΔT and OPΔT, furnishes additional background on the setting and calibration of the OTΔT/ OPΔT trip equations. The insert description and reference given are consistent with the licensee's submittal, setpoint methodology, and hardware configuration. The staff considers the proposed OTΔT and OPΔT Bases update an acceptable means to document the licensee's OTΔT and OPΔT calibration methodology and maintain the OTΔT and OPΔT setpoints consistent with the assumptions of the safety analysis

The licensee also updated the TS Bases references to document additional setpoint methodology calculations and assumptions (Reference 6) and support of the TS revisions associated with the OTΔT and OPΔT setpoint equations (Reference 9). These additional references are acceptable to the staff.

4.0 STAFF CONCLUSIONS

The staff finds the licensee's proposed TS changes to be acceptable. The proposed TS changes are consistent with the licensee's setpoint methodology regarding Nominal Trip Setpoints, the Westinghouse Standard TS, NUREG -1431 (two-column format), and the guidance of Regulatory Guide 1.105, Rev. 2. The removal of the TSP column inequalities is consistent with the use of a Nominal Trip Setpoints by the licensee. The incorporation of a Nominal Trip Setpoint will require the licensee to control the nominal value through the calibration tolerance (reset) as noted in TS Tables 3.3.1-1 and 3.3.2-1. The staff also finds that the licensee's proposal to include additional and revised TS footnotes, revised Allowable Value for turbine stop valve closure, referenced editorial/administrative revisions, and changes to associated TS Bases are acceptable. The staff, therefore, concludes that the proposed TS changes for RTS and ESFAS setpoints are acceptable.

5.0 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.

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (62 FR 68318 dated December 31, 1997). 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.

7.0 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.

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