



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

October 12, 1984

Docket No. 50-395

Mr. O. W. Dixon, Jr.
Vice President Nuclear Operations
South Carolina Electric & Gas Company
P.O. Box 764
Columbia, South Carolina 29218

Dear Mr. Dixon:

Subject: Issuance of Amendment No. 28 to Facility Operating
License NPF-12 Virgil C. Summer Nuclear Station,
Unit No. 1

The Nuclear Regulatory Commission has issued Amendment No. 28 to Facility Operating License NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1 located in Fairfield County, South Carolina. This amendment is in response to your letter dated July 22, 1983.

The amendment modifies the Technical Specifications to correct an error involving incorrect time constants in the overpower delta T and overtemperature delta T equations, delete unnecessary portions of those two equations, and renumber remaining variables. The amendment is effective as of its date of issuance.

A copy of the related safety evaluation supporting Amendment No. 28 to Facility Operating License NPF-12 is enclosed.

Sincerely,

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosures:

1. Amendment No. 28
2. Safety Evaluation

cc w/enclosure:
See next page

DESIGNATED ORIGINAL

Certified By

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SUMMER

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

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

DOCKET NO. 50-395

VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 28
License No. NPF-12

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Virgil C. Summer Nuclear Station, Unit No. 1 (the facility) Facility Operating License No. NPF-12 filed by the South Carolina Electric & Gas Company acting for itself and South Carolina Public Service Authority (the licensees), dated July 22, 1983, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the 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 license amendment will not be inimical to the common defense and security or to the health and safety of the public;
 - E. The issuance of this license 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 attachments to this license amendment and paragraph 2.C(2) of Facility Operating License No. NPF-12 is hereby amended to read as follows:

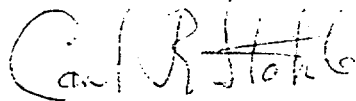
(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 28, are hereby incorporated into this license. South Carolina Electric & Gas Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosure:
Technical Specification Changes

Date of Issuance: October 12, 1984

ATTACHMENT TO LICENSE AMENDMENT NO. 28

FACILITY OPERATING LICENSE NO. NPF-12

DOCKET NO. 50-395

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. To maintain document completeness, the corresponding overleaf pages are also provided.

Amended
Page

2 - 8
2 - 9
2 - 10

Overleaf
Page

2 - 7

Delete page 2 - 11

TABLE 2.2-1 (continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>Functional Unit</u>	<u>Total Allowance (TA)</u>	<u>Z</u>	<u>S</u>	<u>Trip Setpoint</u>	<u>Allowable Value</u>
18. Safety Injection Input from ESF	NA	NA	NA	NA	NA
19. Reactor Trip System Interlocks					
A. Intermediate Range Neutron Flux, P-6	NA	NA	NA	$\geq 1 \times 10^{-10}$ amps	$\geq 6 \times 10^{-11}$ amps
B. Low Power Reactor Trips Block, P-7					
a. P-10 input	7.5	4.56	0	$\leq 10\%$ of RTP	$\leq 12.2\%$ of RTP
b. P-13 input	7.5	4.56	0	$\leq 10\%$ turbine impulse pressure equivalent	$\leq 12.2\%$ of turbine impulse pressure equivalent
C. Power Range Neutron Flux P-8	7.5	4.56	0	$\leq 38\%$ of RTP	$\leq 40.2\%$ of RTP
D. Low Setpoint Power Range Neutron Flux, P-10	7.5	4.56	0	$\geq 10\%$ of RTP	$\geq 7.8\%$ of RTP
E. Turbine Impulse Chamber Pressure, P-13	7.5	4.56	0	$\leq 10\%$ turbine impulse pressure equivalent	$\leq 12.2\%$ turbine pressure equivalent
20. Reactor Trip Breakers	NA	NA	NA	NA	NA
21. Automatic Actuation Logic	NA	NA	NA	NA	NA

RTP = RATED THERMAL POWER

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTSNOTATIONNOTE 1: OVERTEMPERATURE ΔT

$$\Delta T \leq \Delta T_0 \left\{ K_1 - K_2 \frac{(1 + \tau_1 S)}{(1 + \tau_2 S)} [T - T'] + K_3(P - P') - f_1(\Delta I) \right\}$$

- Where:
- ΔT = Measured ΔT by RTD Manifold Instrumentation
 - ΔT_0 = Indicated ΔT at RATED THERMAL POWER
 - K_1 = 1.090
 - K_2 = 0.01450
 - $\frac{1 + \tau_1 S}{1 + \tau_2 S}$ = The function generated by the lead-lag controller for T_{avg} dynamic compensation
 - $\tau_1, \& \tau_2$ = Time constants utilized in the lead-lag controller for T_{avg} , $\tau_1 = 33$ secs., $\tau_2 = 4$ secs.
 - T = Average temperature °F
 - T' \leq 587.4°F Reference T_{avg} at RATED THERMAL POWER
 - K_3 = .0006728
 - P = Pressurizer pressure, psig
 - P' = 2235 psig, Nominal RCS operating pressure
 - S = Laplace transform operator, sec^{-1} .

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

NOTATION (Continued)

NOTE 1: (Continued)

and $f_1(\Delta I)$ is a function of the indicated difference between top and bottom detectors of the power-range nuclear ion chambers; with gains to be selected based on measured instrument response during plant startup tests such that:

- (i) for $q_t - q_b$ between - 34 percent and + 8 percent $f_1(\Delta I) = 0$ where q_t and q_b are percent RATED THERMAL POWER in the top and bottom halves of the core respectively, and $q_t + q_b$ is total THERMAL POWER in percent of RATED THERMAL POWER.
- (ii) for each percent that the magnitude of $q_t - q_b$ exceeds -34 percent, the ΔT trip setpoint shall be automatically reduced by 1.67 percent of its value at RATED THERMAL POWER.
- (iii) for each percent that the magnitude of $q_t - q_b$ exceeds +8 percent, the ΔT trip setpoint shall be automatically reduced by 1.11 percent of its value at RATED THERMAL POWER.

NOTE 2: The channel's maximum trip setpoint shall not exceed its computed trip point by more than 3.6 percent ΔT span.

NOTE 3: OVERPOWER ΔT

$$\Delta T \leq \Delta T_0 \left\{ K_4 - K_5 \left(\frac{\tau_3 S}{1 + \tau_3 S} \right) T - K_6 [T - T''] \right\}$$

Where: ΔT = as defined in Note 1

ΔT_0 = as defined in Note 1

K_4 = 1.091

K_5 = 0.02/°F for increasing average temperature and 0 for decreasing average temperature

$\frac{\tau_3 S}{1 + \tau_3 S}$ = The function generated by the rate-lag controller for T_{avg} dynamic compensation

TABLE 2.2-1 (Continued)REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTSNOTATION (Continued)

NOTE 3: (Continued)

τ_3	=	Time constant utilized in the rate-lag controller for T_{avg} , $\tau_3 = 10$ secs.
K_6	=	$0.001190/^\circ\text{F}$ for $T > T''$ and $K_6 = 0$ for $T \leq T''$
T	=	as defined in Note 1
T''	<	587.4°F Reference T_{avg} at RATED THERMAL POWER
S	=	as defined in Note 1

NOTE 4: The channel's maximum trip setpoint shall not exceed its computed trip point by more than 2.7 percent ΔT span.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 28 TO FACILITY OPERATING LICENSE NPF-12

SOUTH CAROLINA ELECTRIC & GAS COMPANY
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1

I. INTRODUCTION

By letter dated July 22, 1983, South Carolina Electric and Gas Company (the licensee) requested a change to Technical Specifications to correct time constants in the overpower ΔT and overtemperature ΔT equations. The change also deletes unnecessary portions of those two equations involving multiplication by a factor of one and the addition of zero. The remaining variables will then be renumbered for administrative purposes.

II. EVALUATION

The licensee states that Westinghouse Electric Corporation reviewed the applicable safety analysis and confirmed that the correct value for both time constants Tau 1 and Tau 2 is zero. Technical Specifications list the values for Tau 1 and Tau 2 as 8 and 3 seconds, respectively. The NRC staff finds this change to correct Technical Specifications acceptable. Deleting the portions of these two equations which involve multiplying by one or adding zero has no effect on the equations and is, therefore, acceptable. Renumbering the remaining variables, also, has no effect on the equations and is acceptable. Therefore, the staff concludes that the requested amendment is acceptable.

III. ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 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 this amendment.

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IV. CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (49 FR 25373) on June 20, 1984, and consulted with the state of South Carolina. No public comments were received, and the state of South Carolina did not have any comments.

We have 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, and
(2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Jon B. Hopkins, Licensing Branch No. 4, DL
Marvin S. Dunenfeld, Core Performance Branch, DSI

Dated: October 12, 1984

October 12, 1984

AMENDMENT NO. 28 TO FACILITY OPERATING LICENSE NO. NPF-12 - Virgil C. Summer Unit 1

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