

June 19, 1991

Docket No. 50-395

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Mr. John L. Skolds
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88
Jenkinsville, South Carolina 29065

Dear Mr. Skolds:

SUBJECT: ISSUANCE OF AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE
NO. NPF-12 REGARDING REQUIRED SHUTDOWN MARGIN - VIRGIL C. SUMMER
NUCLEAR STATION, UNIT NO. 1 (TAC NO. 79683)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 100 to Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application dated February 4, 1991.

The proposed amendment changes the Technical Specifications to revise Figure 3.1-3, "Required Shutdown Margin (Modes 3, 4 and 5)," to incorporate the more negative boron worths associated with the Cycle 6 core and subsequent cores. In addition, an administrative change was included in the change request to revise Basis 3/4.2-1, "Axial Flux Difference," to refer to the Core Operating Limits Report rather than the Peaking Factor Limits Report.

A copy of the related Safety Evaluation is enclosed. Notice of Issuance will be included in the Commission's Bi-weekly Federal Register notice.

Sincerely,

Original Signed By:

George F. Wunder, Project Manager
Project Directorate II-1
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

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PDR ADDCK 05000395
P PDR

Enclosures:

- 1. Amendment No. 100 to NPF-12
- 2. Safety Evaluation

cc w/enclosures:
See next page

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OFC	:LA:PD21:DRPE:PM:PD21:DRPE:OGC	:D:PD1:DRPE	:	:	:
NAME	:PAnderson:	:GWunder:sl	:myring	:AMetola	:
DATE	:5/30/91	:06/04/91	:6/16/91	:6/18/91	:

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Document Name: SUMMER MASTER AMENDMENT

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Mr. John L. Skolds
South Carolina Electric & Gas Company

Virgil C. Summer Nuclear Station

cc:

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Nuclear Coordinator
S.C. Public Service Authority
c/o Virgil C. Summer Nuclear Station
P. O. Box 88 (Mail Code 802)
Jenkinsville, South Carolina 29065

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South Carolina Department of Health
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South Carolina Electric & Gas Company
Mr. A. R. Koon, Jr., Manager
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Virgil C. Summer Nuclear Station
P. O. Box 88
Jenkinsville, South Carolina 29065



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. 100
License No. NPF-12

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by South Carolina Electric & Gas Company (the licensee), dated February 4, 1991, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Facility Operating License No. NPF-12 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 100, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. South Carolina Electric & Gas Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed By:

Anthony J. Mendiola, Acting Director
Project Directorate II-1
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 19, 1991

OFC	: LA: PD21: DRPR	: PM: PD21: DRPR	: (A)D: PD21: DRPR:	:
NAME	: <i>Anderson</i>	: <i>Glander</i>	: <i>AMendiola</i>	:
DATE	: <i>5/30/91</i>	: <i>06/04/91</i>	: <i>6/18/91</i>	:

ATTACHMENT TO LICENSE AMENDMENT NO. 100
TO 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 indicated by marginal lines.

Remove Pages

3/4 1-3a

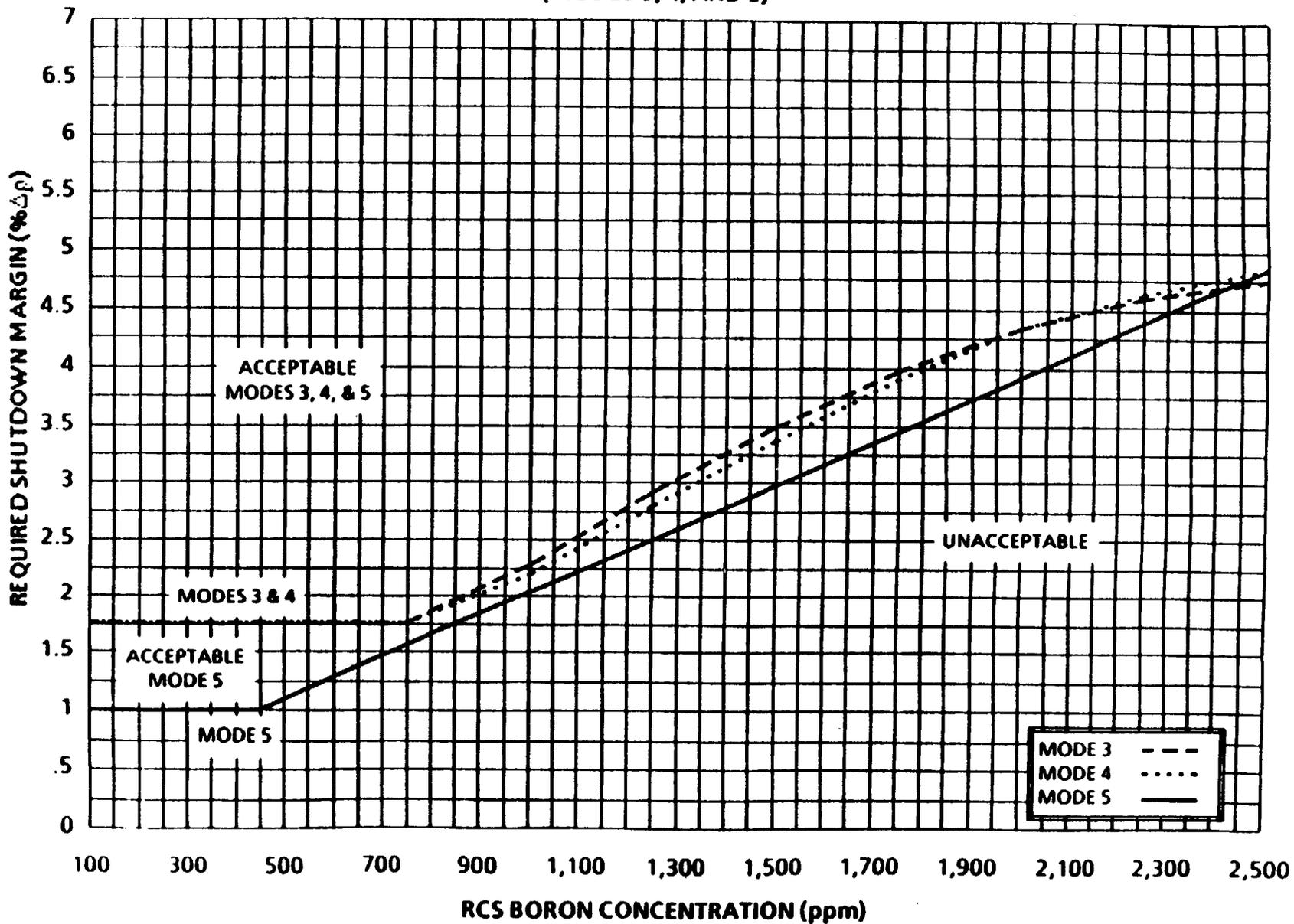
B 3/4 2-2

Insert Pages

3/4 1-3a

B 3/4 2-2

FIGURE 3.1-3
 REQUIRED SHUTDOWN MARGIN
 (MODES 3, 4, AND 5)



3/8 1.33

Amendment No. 48, 73, 100

POWER DISTRIBUTION LIMIT

BASES

AXIAL FLUX DIFFERENCE (Continued)

At power levels below APL^{ND} , the limits on AFD are defined in the COLR consistent with the Relaxed Axial Offset Control (RAOC) operating procedure and limits. These limits were calculated in a manner such that expected operational transients, e.g., load follow operations, would not result in the AFD deviating outside of those limits. However, in the event such a deviation occurs, the short period of time allowed outside of the limits at reduced power levels will not result in significant xenon redistribution such that the envelope of peaking factors would change sufficiently to prevent operation in the vicinity of the APL^{ND} power level.

At power levels greater than APL^{ND} , two modes of operation are permissible; (1) RAOC, the AFD limit of which are defined in the COLR and (2) Base Load operation, which is defined as the maintenance of the AFD within COLR specifications band about a target value. The RAOC operating procedure above APL^{ND} is the same as that defined for operation below APL^{ND} . However, it is possible when following extended load following maneuvers that the AFD limits may result in restrictions in the maximum allowed power or AFD in order to guarantee operation with $F_Q(z)$ less than its limiting value. To allow operation at the maximum permissible power level the Base Load operating procedure restricts the indicated AFD to relatively small target band (as specified in the COLR) and power swings ($APL^{ND} \leq \text{power} \leq APL^{BL}$ or 100% Rated Thermal Power, whichever is lower). For Base Load operation, it is expected that the plant will operate within the target band. Operation outside of the target band for the short time period allowed will not result in significant xenon redistribution such that the envelope of peaking factors would change sufficiently to prohibit continued operation in the power region defined above. To assure there is no residual xenon redistribution impact from past operation on the Base Load operation, a 24-hour waiting period at a power level above APL^{ND} and allowed by RAOC is necessary. During this time period load changes and rod motion are restricted to that allowed by the Base Load procedure. After the waiting period extended Base Load operation is permissible.

The computer determines the one minute average of each of the OPERABLE excore detector outputs and provides an alarm message immediately if the AFD for at least 2 of 4 or 2 of 3 OPERABLE excore channels are: (1) outside the allowed delta-I power operating space (for RAOC operation), or (2) outside the allowed delta-I target band (for Base Load operation). These alarms are active when power is greater than: (1) 50% of RATED THERMAL POWER (for RAOC operation), or (2) APL^{ND} (for Base Load operation). Penalty deviation minutes for Base Load operation are not accumulated based on the short period of time during which operation outside of the target band is allowed.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. NPF-12
SOUTH CAROLINA ELECTRIC & GAS COMPANY
SOUTH CAROLINA PUBLIC SERVICE AUTHORITY
VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1
DOCKET NO. 50-395

1.0 INTRODUCTION

By letter dated February 4, 1991, South Carolina Electric and Gas Company (SCE&G or the licensee) submitted a request for changes to the Virgil C. Summer Nuclear Station, Unit No. 1 (Summer Station), Technical Specifications (TS). The requested change would revise Figure 3.1-3, "Required Shutdown Margin (Modes 3, 4 and 5)," to incorporate the more negative boron worths associated with the Cycle 6 core and subsequent cores. In addition, an administrative change was included in the TS change request to revise Basis 3/4.2-1, "Axial Flux Difference," to refer to the Core Operating Limits Report (COLR) rather than the Peaking Factor Limits Report (PFLR).

2.0 EVALUATION

Figure 3.1-3 specifies the shutdown margin that must be maintained for varying reactor coolant system (RCS) concentrations of boron in order to (1) control, within acceptable limits, the reactivity transients associated with postulated accident conditions; and (2) maintain the reactor sufficiently subcritical to prevent inadvertent criticality.

The current shutdown margin requirements for the shutdown Modes 3, 4 and 5 are based on the boron dilution accident evaluations submitted in support of Amendment 75 to the Virgil C. Summer Nuclear Station Operating License. These evaluations were performed using an accepted Westinghouse methodology that takes credit for the high flux at shutdown alarm set at twice background to alert the operator that a dilution event is in progress. The results show that the operator has sufficient time to recognize and terminate an uncontrolled reactivity insertion before shutdown margin is lost and the reactor becomes critical.

For Cycle 6, however, the boron worths for Modes 3 and 4 were calculated to be more negative than the values assumed in the current boron dilution accident analyses. The more negative boron worth reduces the required change in boron concentration necessary to achieve criticality during a dilution event and results in a reduction in operator action time of approximately two minutes. To resolve this problem, SCE&G has proposed to revise the TS shutdown margin curve for Modes 3 and 4 to reflect the larger required shutdown margin to ensure that the operator action time to detect and terminate an inadvertent

boron dilution event is not reduced. These higher shutdown margin requirements will require higher boron concentrations to be maintained while in Modes 3 and 4 of the fuel cycle. Since the boron worth for Mode 5 was determined to be bounded by previously analyzed values, the Mode 5 curve was not changed from the one currently in the TS.

The proposed revision to change PFLR to COLR in TS Basis 3/4.2.1 is administrative in nature since it simply deletes a reference to an obsolete report (PFLR) and references the report which replaced it. This change is acceptable.

3.0 SUMMARY

The requested change is acceptable because the proposed shutdown margin curves were developed using the same approved methodology used to develop the current curves. In addition, the current margin to criticality, as reflected in the Final Safety Analysis Report of the boron dilution accident, will be maintained. Based on the above considerations, the staff finds the proposed changes acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement 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 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 the amendment involves no significant hazards consideration, and there has been no public comment on such finding (56 FR 9386). Accordingly, the amendment meets 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 amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: L. Kopp

Date: June 19, 1991

AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. NPF-12 - SUMMER, UNIT No. 1

Docket File

NRC PDR

Local PDR

PDII-1 Reading

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OC/LFMB

cc: Summer Service List

TRANSMITTAL TO: X Document Control Desk, 016 Phillips
 ADVANCED COPY TO: _____ The Public Document Room
 DATE: 6/21/91
 FROM: SECY Correspondence & Records Branch

Attached are copies of a Commission meeting transcript and related meeting document(s). They are being forwarded for entry on the Daily Accession List and placement in the Public Document Room. No other distribution is requested or required.

Meeting Title: Brief on Shutdown Risk Status

Meeting Date: 6/19/91 Open X Closed _____

Item Description*:	Copies Advanced to PDR	DCS Copy
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