

February 22, 1983

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. 11 to Facility Operating
License NPF-12 Virgil C. Summer Nuclear Station,
Unit No. 1

The Nuclear Regulatory Commission has issued Amendment No. 11 to Facility Operating License NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1 located in Fairfield County, South Carolina. The amendment is issued in response to your application dated January 31, 1983.

The amendment provides for extended operation of the plant in excess of 2000 hours within specified power levels.

A copy of the related safety evaluation supporting Amendment No. 11 to Facility Operating License NPF-12 is enclosed. Also enclosed is a copy of a related notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

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

Enclosures:

1. Amendment No. 11
2. Safety Evaluation
3. Federal Register Notice

cc w/enclosure:
See next page

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SURNAME	MDuncan/hmc	JHopkins	EAdensam				
DATE	2/1/83	2/17/83	2/1/83				

SUMMER

Mr. O. W. Dixon, Jr.
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
P.O. Box 764 (Mail Code F-04)
Columbia, South Carolina 29218

cc: Mr. Henry Cyrus
Senior Vice President
South Carolina Public Service Authority
223 North Live Oak Drive
Moncks Corner, South Carolina 29461

J. B. Knotts, Jr., Esq.
Debevoise & Liberman
1200 17th Street, N.W.
Washington, D. C. 20036

Mr. Mark B. Whitaker, Jr.
Group Manager - Nuclear Engineering
& Licensing
South Carolina Electric & Gas Company
P.O. Box 764
Columbia, South Carolina 29218

Mr. Brett Allen Bursey
Route 1, Box 93C
Little Mountain, South Carolina 29076

Resident Inspector/Summer NPS
c/o U. S. Nuclear Regulatory Commission
Route 1, Box 64
Jenkinsville, South Carolina 29065

James P. O'Reilly, Regional Administrator
U.S. Nuclear Regulatory Commission,
Region II
101 Marietta Street
Atlanta, Georgia 30303

Mr. R. W. Knapp
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095-05000

Chairman, Fairfield County Council
P.O. Box 293
Winnsboro, South Carolina 29180

State Clearinghouse
Office of the Governor
Division of Administration
1205 Pendleton Street, 4th Floor
Columbia, South Carolina 29201

Attorney General
Box 11549
Columbia, South Carolina 29211

Mr. Heyward G. Shealy, Chief
Bureau of Radiological Health
South Carolina Department of Health
and Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Director, Eastern Environmental
Radiation Facility
U.S. Environmental Protection Agency
P.O. Box 3009
Montgomery, Alabama 36193

EIS Review Coordinator
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30308

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power. In addition, the duration specified for operation at each power level above may be exceeded as long as the additional power operation is deducted from the next higher power level(s).

Prior to operation in excess of 3000 hours at power levels in excess of 5% of full power, SCE&G shall satisfy the NRC staff that appropriate hardware modifications and appropriate surveillance measures have been implemented with respect to steam generator tube vibration.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Darrell G. Eisenhut

Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Date of Issuance: February 22, 1983

*NOTE: SEE PREVIOUS WHITE FOR CONCURRENCE

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SURNAME	*MDuncan/hmc	*JHopkins	*Goldberg	EAdensam	Novak	DEisenhut	
DATE	2/17/83	2/17/83	2/17/83	2/18/83	2/18/83	2/22/83	

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.
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 January 31, 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, Facility Operating License NPF-12 is amended by the following change:

- A. Change paragraph 2.C.(14) to read as follows:

(14) Model D-3 Steam Generator (Section 5.4.2, SSER #5)

Prior to operation in excess of 3000 hours at power levels in excess of 5% of full power as detailed below, SCE&G shall satisfy the NRC staff that appropriate hardware modifications and appropriate surveillance measures have been implemented

with respect to steam generator tube vibration.

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<u>Time Period*</u>	<u>Maximum % Full Power</u>
2592 hours	50%
24 hours	60%
336 hours	75%
24 hours	90%
24 hours	100%

*The duration specified for each power level may be exceeded as long as the additional power operation is deducted from the next higher power level(s).

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

FOR THE NUCLEAR REGULATORY COMMISSION

Darrell G. Eisenhower, Director
Division of Licensing
Office of Nuclear Reactor Regulation

Date of Issuance:

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SURNAME	MDuncan/hmc	JHopkins	EA	EA	TNovak	DEisenhut	
DATE	2/17/83	2/17/83	2/17/83	2/17/83	2/17/83	2/17/83	

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. 11
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 January 31, 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, Facility Operating License NPF-12 is amended by the following change:
 - A. Change paragraph 2.C.(14) to read as follows:

(14) Model D-3 Steam Generator (Section 5.4.2, SSER #5)

Operation at power levels in excess of 5% of full power shall be restricted as follows: 2592 hours at no greater than 50% of full power; 24 hours at no greater than 60% of full power; 336 hours at no greater than 75% of full power; 24 hours at no greater than 90% of full power; and 24 hours at no greater than 100% of full

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 11 TO FACILITY OPERATING LICENSE NPF-12

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

DOCKET NO. 50-395

INTRODUCTION

The technical basis for initial operation of the Virgil C. Summer Station at power levels up to 50% for 2000 hours was provided in the licensee submittal of September 1982. By letter dated January 31, 1983, South Carolina Electric & Gas Company (SCE&G) submitted a basis for extending this initial 2000 hour period by 1000 hours at 50% power and with limited operation at 60, 75, 90 and 100% for plant startup testing. Details of the proposed power operation program are as follows:

<u>Time Period</u>	<u>% Full Power</u>
2000 hours	50%
1000 hours consisting of:	
592 hours	50%
24 hours	60%
336 hours	75%
24 hours	90%
24 hours	100%

Additionally, the duration specified for each power level may be exceeded as long as the additional power operation is deducted from the next higher power levels.

BACKGROUND

The September 1982 report provided an assessment of V. C. Summer's power operating program (2000 hours at no greater than 50% of full power) by comparing this program with the operating experience at other plants with split flow steam generators. Plant operating experience, as presented in the September 1982 report, is summarized below:

Plant A

Plant A started up in the fall of 1980 and, up to shutdown in October 1981, had operated at power levels at or greater than 50% for more than 3000 hours. Plant A was shut down in October 1981 with primary-to-secondary leakage. Subsequent inspection revealed that one tube was leaking on the

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cold leg side in the pre-heat section of one steam generator. Eddy Current Test (ECT) inspection of all three steam generators revealed wear indications in general on tubes in the first three rows of each steam generator.

Plant A returned to power in April 1982 and the unit was operated at 40% of main feed flow (with short intervals at higher power levels to obtain instrumentation data) for an approximate 1500 hour operating period. This period ended in June 1982.

An Eddy Current inspection was performed in June 1982 and those results compared with the March 1982 inspection. The June 1982 data resulted in a decrease in the total number of indications but a slight increase in the size of the larger indications.

Plant A returned to power in August 1982 and operated at 40% of main feed flow for approximately 2000 hours before shutdown in November 1982.

Plant B

Plant B started up in the spring of 1981 and, up to shutdown in November 1981, had operated at power levels at or greater than 50% for more than 2000 hours. Plant B was shut down in early November 1981 to perform ECT inspections of steam generator tubes. A pattern of indications similar to, but less pronounced than that at Plant A, was found.

Plant B returned to power in December 1981 for an approximate 1500 hour operating period at 50% of main feed flow (with short intervals at higher power levels to obtain instrumentation data). This period ended in March 1982. ECT inspection of the steam generators was performed, and it was concluded that little, if any, wear had occurred.

Plant B returned to power in April 1982 for an approximate 2000 hour operating period (which ended in July 1982) at 50% main feed flow. A photographic evaluation of the ECT data from the March and July inspections was performed by Westinghouse, with the conclusion that there has been no significant change in tube wear due to this operating period.

Plant B returned to power in September 1982 and has subsequently operated at 50% main feed flow for over 2000 hours.

Plant C

Plant C performed startup testing in late 1981 and operated at various power levels up to 100% through February 1982, accumulating 1500 hours of operation at and above 50% power, including 324 hours at and above 75% power. ECT inspection following shutdown in February 1982 revealed only minor degradation (20% throughwall penetration by differential ECT) on four tubes after this first period of operation.

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From March to June 1982, Plant C operated for 1500 hours at 50% main feed flow, followed by 710 hours at 75%. An Eddy Current inspection was performed and it was concluded that some wear had occurred but was difficult to quantify due to the varying inspection techniques.

Plant C returned to power in July 1982 and operated for approximately 1800 hours at 50% and 700 hours at 75% main feed flow before shutdown in November 1982.

In summary, there has been no significant tube wear observed in plants under operating conditions proposed herein for V. C. Summer. In particular, the experience of Plant B at 50% for over 3500 hours without significant tube wear and the experience of Plant C at 50% for 1500 hours and at 75% for 324 hours with minor degradation is relevant. (Plants which have significant tube wear indications have operated extensively at power levels of 75% and above prior to the inspection which indicated the significant levels of wear.) Consequently, the proposed power operation program for V. C. Summer should not result in more than minor levels of wear.

TUBE VIBRATION MEASUREMENTS

Tube vibration measurements taken at V. C. Summer in December 1982 provide for an additional comparison between V. C. Summer and other operating plants with split flow steam generators. For these measurements, accelerometers were installed in R49C51 and R49C67, (window and non-window tubes, respectively, in Steam Generator A); and data were obtained at power levels ranging from hot shutdown to 48% power. It was concluded from these tests that the tube motion was either absent or had low amplitude tube vibration levels which are within the amplitude ranges experienced at the operating power levels of other power plants.

EVALUATION

The September 1982 Report indicated that the V. C. Summer Station should be operated at 50% power (not exceeding 50% of full power feedwater flow to the main feedwater nozzle) for a period of up to 2000 hours. Further studies have been performed to evaluate the feasibility of extending the operational cycle.

Tube wear estimates, as quoted in the September 1982 Report, were extended to show the effect of increasing the operational period from 2000 to 3000 hours at 50%. In addition, tube wear estimates were extended to include the power history being proposed for V. C. Summer. Extending the operating period from 2000 to 3000 hours at 50% power increases the best estimate tube wear calculation by about 1.5% and the upper bound by about 2.5%. Furthermore, for the proposed operating history, the best estimate and upper bound tube wear are calculated to be less than 12% and 24%, respectively.

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An interim operating program has been evaluated for operation of the V. C. Summer Station on the basis of precluding significant steam generator tube wear. The tube wear for this proposed program has been evaluated by a quantitative assessment of wear using existing Westinghouse correlations, a comparison of the proposed V. C. Summer operating program with operational experience at other plants with split flow steam generators and a comparison of V. C. Summer tube vibration measurements with equivalent measurements in other split flow steam generators. The result of this evaluation is that significant tube wear should be precluded by adhering to the proposal. The staff, therefore, finds the V. C. Summer proposed operating program acceptable.

ENVIRONMENTAL CONSIDERATION

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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.

Date: February 22, 1983

Principal Contributors: Jon Hopkins, Licensing Branch No. 4, DL
J. Rajan, Materials Engineering Branch, DSI

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UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-395VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1NOTICE OF ISSUANCE OF AMENDMENT TOFACILITY OPERATING LICENSE NO. NPF-12

The U.S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 11 to Facility Operating License No. NPF-12, issued to South Carolina Electric & Gas Company and South Carolina Public Service Authority (the licensees) for the Virgil C. Summer Nuclear Station, Unit No. 1 (the facility) located in Fairfield County, South Carolina. The amendment provides for extended operation of the plant up to 3000 hours within specified power levels. The amendment is effective as of its date of issuance.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations. The Commission has made appropriate findings as required by the Act and the Commission's regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) South Carolina Electric & Gas Company letter, dated January 31, 1983, (2) Amendment No. 11 to Facility Oper-

ating License No. NPF-12, and (3) the Commission's related Safety Evaluation.

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All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D. C. 20555 and the Fairfield County Library, Garden and Washington Streets, Winnsboro, South Carolina 29180. A copy of Amendment No. 11 may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 22nd day of February 1983.

FOR THE NUCLEAR REGULATORY COMMISSION

5/
Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

OFFICE	LA:DL:LB.#4	DL:LB.#4	OELD	DL:LB.#4			
SURNAME	MDuncan/hmc	JHopkins	C. J. D. B. N. C.	EAdensam			
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

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February 23, 1983

Docket No. 50-395

Docketing and Service Section
Office of the Secretary of the Commission

SUBJECT: **Virgil C. Summer Nuclear Station, Unit 1 (SOUTH CAROLINA ELECTRIC & GAS COMPANY; SOUTH CAROLINA PUBLIC SERVICE AUTHORITY)**

One ~~Two~~ signed originals of the Federal Register Notice identified below ~~are~~ ^{is} enclosed for your transmittal to the Office of the Federal Register for publication. Additional conformed copies (12) of the Notice are enclosed for your use.

- ☐ Notice of Receipt of Application for Construction Permit(s) and Operating License(s).
- ☐ Notice of Receipt of Partial Application for Construction Permit(s) and Facility License(s): Time for Submission of Views on Antitrust Matters.
- ☐ Notice of Availability of Applicant's Environmental Report.
- ☐ Notice of Proposed Issuance of Amendment to Facility Operating License.
- ☐ Notice of Receipt of Application for Facility License(s); Notice of Availability of Applicant's Environmental Report; and Notice of Consideration of Issuance of Facility License(s) and Notice of Opportunity for Hearing.
- ☐ Notice of Availability of NRC Draft/Final Environmental Statement.
- ☐ Notice of Limited Work Authorization.
- ☐ Notice of Availability of Safety Evaluation Report.
- ☐ Notice of Issuance of Construction Permit(s).
- ☒ Notice of Issuance of Facility Operating License(s) ~~or~~ Amendment(s).
- ☐ Other: _____

Enclosure:
As Stated

Office of Nuclear Reactor Regulation

OFFICE →	DL:LB#4					
SURNAME →	MDuncan					
DATE →	2/23/83					

AMENDMENT NO. 11 TO FACILITY OPERATING LICENSE NPF-12 - Virgil C. Summer Unit 1

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J. Hopkins
M. Duncan
I&E
OELD
E. Adensam
R. Hartfield, MPA
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D. Eisenhower/R. Purple
J. Souder
T. Barnhart (4)
J. M. Taylor, DPR: I&E
E. L. Jordan, DEQA: I&E

bcc w/enclosures:

NRC PDR
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NSIC
TERA
A. Rosenthal, ASLAB
ASLBP
ACRS (16)
W. Jones (10)