



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

December 20, 1985

Docket No. 50-395

Mr. D. A. Nauman  
Vice President Nuclear Operations  
South Carolina Electric & Gas Company  
P.O. Box 764 (Mail Code 167)  
Columbia, South Carolina 29218

Dear Mr. Nauman:

Subject: Issuance of Amendment No. 48 to Facility Operating  
License NPF-12 Virgil C. Summer Nuclear Station,  
Unit No. 1

The Nuclear Regulatory Commission has issued Amendment No. 48 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 letters dated November 24, 1982, October 21, 1983, and February 29, 1984.

The amendment modifies license condition 2.C.(5) to change the monitoring and inspection of the service water intake structure from that recommended by Regulatory Guide 1.127 to an inspection interval of every five years maximum. The amendment is effective as of its date of issuance.

A copy of the related safety evaluation supporting Amendment No. 48 to Facility Operating License NPF-12 is enclosed.

Sincerely,

Lester S. Rubenstein, Director  
PWR Project Directorate No. 2  
Division of PWR Licensing-A

Enclosures:

1. Amendment No. 48
2. Safety Evaluation

cc w/enclosure:  
See next page

December 20, 1985

AMENDMENT NO. 48 TO FACILITY OPERATING LICENSE NO. NPF-12 - Virgil C. Summer Unit 1

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Virgil C. Summer Nuclear Station

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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. 48  
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 November 24, 1982, and amended October 21, 1983, and February 29, 1984, 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 as follows:
  - A. Change paragraph 2.C.(5)c. to read as follows:
    - c. The schedule and the reporting requirements of the above inspection shall be in accordance with the recommendations stated in Regulatory Guide 1.127.
  - B. Change paragraph 2.C.(5)d. to read as follows:
    - d. The condition of the intake structure shall be monitored to detect new cracks and changes to the old grouted or ungrouted cracks.

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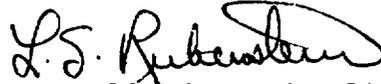
Observed changes (length or width) in existing cracks and any new cracks shall be reported by SCE&G to the NRC staff. The maximum inspection interval for this monitoring of the intake structure is five (5) years.

C. Add paragraph 2.C.(5)e. to read as follows:

- e. The condition of the intake structure shall also be monitored as specified in (d.) above following any earthquake during which the plant seismic instrumentation indicates that the operating basis earthquake has been exceeded.

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

FOR THE NUCLEAR REGULATORY COMMISSION



Lester S. Rubenstein, Director  
PWR Project Directorate No. 2  
Division of PWR Licensing-A

Date of Issuance: December 20, 1985



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 48 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 November 24, 1982, as amended by letters dated October 21, 1983, and February 29, 1984, South Carolina Electric & Gas Company requested that license condition 2.C.(5) be amended to change the monitoring and inspection of the service water intake structure from that recommended by Regulatory Guide 1.127 to an inspection interval of every five years maximum.

II. EVALUATION

The tunnel portion of the service water intake structure (the portion subject to underwater inspection) is formed of lightly reinforced concrete with inside dimensions of 12 ft. (wide) x 15 ft. (high) and total length of 167 ft. The service water intake tunnel at the V. C. Summer station underwent excessive differential settlement prior to being put into service. In the opinion of the NRC staff, the differential settlement was the result of inadequate investigation and preparation of the soils underlying the structure. The settlement was evidenced by cracks, some as wide as 0.2 inches at the point of maximum opening that broke through the 3 ft. thick roof and in some instances reached approximately 40 ft. in overall length. The applicant instituted repair procedures using epoxy grout to seal off cracks wider than 0.012 inches. (The provisions of the American Concrete Institute (ACI) 318-71 design code strive to assure that concrete cracks do not exceed widths of about 0.012 inches as a measure to protect reinforcing steel from degradation due to corrosion. In critical structures, significant cracking of greater widths is usually cause for engineering evaluation and repair where warranted.) An underwater inspection performed by the licensee in 1979 found that two grout holes had not been plugged and that some cracks had not been recorded in the initial report to the NRC. The need for inspection is motivated by two principal concerns. The first is maintenance of sufficient structural integrity to assure function under extreme environmental loading, e.g., earthquakes. The second is to assure that silt or debris has not filtered through cracks or otherwise accumulated to a degree that could degrade function of the intake structure under design basis events. These are much the same reasons that internal inspection of large water intake and discharge systems are typically performed during each major overhaul of electric generating stations, other large industrial complexes and municipal sanitary systems. In many instances dewatering of

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the system has been the desired approach, although inspections utilizing a diver are becoming more common. In the nuclear industry, diver inspection has been extended to reactor cavities, torus tubes, spent fuel pits, and fuel transfer canals, as well as intake and discharge structures.

By letter dated May 11, 1983, the licensee provided a report of a January 1983 diver's inspection of the essential service water intake structure of the Virgil C. Summer Nuclear Station. The results of this inspection provide a significant data point in assessing the interrelation of measured settlement and the condition of the intake structure.

The 1983 diver inspection report indicates eight new cracks in the intake tunnel since the June 1979 diver inspection. All new cracks were less than 0.015 inch wide. Most cracks were vertically oriented and all were in the tunnel wall. The diver also reported accumulation of silt on the walls and floor of the intake. Based on its review of the January 1983 inspection report, the staff finds that the condition of the intake tunnel is stabilized, i.e., no further significant cracking or deterioration of the repaired cracks after approximately four years of service.

Monitoring masts are attached to the intake structure to provide indication of settlement or rebound occurrences. The licensee will perform surveillance of the monitoring masts semiannually for the life of the facility to ensure that no undetected significant differential movement occurs. Indications of differential movement greater than one (1) inch would result in more frequent surveys, and an additional diver's inspection.

Under R.G. 1.127, the recommended inspection interval is every two years through 1987 but thereafter the inspection interval may be extended to five years if the results of the previous inspections warrant the extension. Based on the stabilized condition of the intake structure and the semiannual surveillance of the monitoring masts, the staff concludes that changing the inspection interval to a five year maximum inspection interval before the time period recommended by R.G. 1.127 is acceptable.

### III. ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the inspection 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.

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 21839) on May 23, 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

Dated: December 20, 1985