April 17, 1992

Docket No. 50-395

DISTRIBUTION
See attached page

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. 107 TO FACILITY OPERATING LICENSE NO. NPF-12 REGARDING SURVEILLANCE TESTING OF NEW REPLACEMENT CLASS 1E BATTERIES - VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1, (TAC NO. M80664)

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 107 to Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1. The amendment changes the Technical Specifications and the associated Bases page in response to your application dated June 12, 1991.

The amendment changes the minimum battery bank average temperature from greater than or equal to 65 degrees F to greater than or equal to 60 degrees F and lowers the minimum battery bank capacity from 90 percent to 80 percent. These changes reflect the fact that the replacement battery installed during refueling outage 5 meets the Institute of Electrical and Electronics Engineers (IEEE) Standard 450 1987, "Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

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,

Orignal signed by:

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

Enclosures:
1. Amendment No. 107 to NPF-12
2. Safety Evaluation

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cc w/enclosures: See next page

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OFFICE:	LA:PD21:DRPE	PM:PD21:DRPE	OGC	D:PD21:DRPE	
NAME:	PAnderson	GWunder		EAdensam	
DATE:	3/27/92	03/30/92	4/1/92	4/13/92	/ /

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Document Name: SUM80664.AMD

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cc:

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Nuclear Coordinator
S.C. Public Service Authority
c/o Virgil C. Summer Nuclear Station
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South Carolina Electric & Gas Company
Mr. A. R. Koon, Jr., Manager
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AMENDMENT NO. 107 TO FACILITY OPERATING LICENSE NO. NPF-12 - SUMMER, UNIT No.

Docket File
NRC PDR
Local PDR PDII-1 Reading
S. Varga (14E4)
E. Adensam
P. Anderson
G. Wunder
OGC
D. Hagan (MNBB 3302)
E. Jordan (MNBB 3302)
G. Hill (4) (P1-37)
Wanda Jones (P-130A)
C. Grimes (11F23)
F. Rosa (7E4)
R. Jenkins (7E4)
ACRS (10)
GPA/PA
OC/LFMB
L. Reyes, RII

cc: Summer Service List

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. 107
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 June 12, 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:

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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 107 , 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

Elinor G. Adensam

Elinor G. Adensam, 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: April 17, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 107

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	Insert Pages
3/4 8-10	3/4 8-10
B 3/4 8-2	B 3/4 8-2

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 92 days and within 7 days after a battery discharge with battery terminal voltage below 110-volts, or battery overcharge with battery terminal voltage above 150-volts, by verifying that:

1. The parameters in Table 4.8-2 meet the Category B limits,

2. There is no visible corrosion at either terminals or connectors, or the connection resistance of these items is less than 150×10^{-6} ohms, and

3. The average electrolyte temperature of 10 of the connected cells is $\geq$ 60°F.

c. At least once per 18 months by verifying that:

1. The cells, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration,

2. The cell-to-cell and terminal connections are clean, tight, and coated with anti-corrosion material,

3. The resistance of each cell-to-cell and terminal connection is less than or equal to 150×10^{-6} ohms, and

4. The battery charger will supply at least 300 amperes at 132 volts for at least 8 hours.

d. At least once per 18 months, during shutdown, by verifying that the battery capacity is adequate to supply and maintain in OPERABLE status all of the actual or simulated emergency loads for the design duty cycle when the battery is subjected to a battery service test.

e. At least once per 60 months, during shutdown, by verifying that the battery capacity is at least 80% of the manufacturer's rating when subjected to a performance discharge test. This performance discharge test may be performed in lieu of the battery service test required by Surveillance Requirement 4.8.2.1.d.

f. Annual performance discharge tests of battery capacity shall be given to any battery that shows signs of degradation or has reached 85% of the service life expected for the application. Degradation is indicated when the battery capacity drops more than 10% of rated capacity from its average on previous performance tests, or is below 90% of the manufacturer's rating.

A.C. SOURCES, D.C. SOURCES AND ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The Surveillance Requirement for demonstrating the OPERABILITY of the Station batteries are based on the recommendations of Regulatory Guide 1.129, "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978, and IEEE Std 450-1987, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations."

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage onfloat charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.

Table 4.8-2 specifies the normal limits for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. The limits for the designated pilot cells float voltage and specific gravity, greater than 2.13 volts and .015 below the manufacturer's full charge specific gravity or a battery charger current that had stabilized at a low value, is characteristic of a charged cell with adequate capacity. The normal limits for each connected cell for float voltage and specific gravity, greater than 2.13 volts and not more than .020 below the manufacturer's full charge specific gravity with an average specific gravity of all the connected cells not more than .010 below the manufacturer's full charge specific gravity, ensures the OPERABILITY and capability of the battery.

Operation with a battery cell's parameter outside the normal limit but within the allowable value specified in Table 4.8-2 is permitted for up to 7 days. During this 7 day period: (1) the allowable values for electrolyte level ensures no physical damage to the plates with an adequate electron transfer capability; (2) the allowable value for the average specific gravity of all the cells, not more than .020 below the manufacturer's recommended full charge specific gravity, ensures that the decrease in rating will be less than the safety margin provided in sizing; (3) the allowable value for an individual cell's specific gravity, ensures that an individual cell's specific gravity will not be more than .040 below the manufacturer's full charge specific gravity and that the overall capability of the battery will be maintained within an acceptable limit, and (4) the allowable value for an individual cell's float voltage, greater than 2.07 volts, ensures the battery's capability to perform its design function.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 107 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 June 12, 1991, the South Carolina Electric & Gas Company (the licensee) submitted a request for changes to the Virgil C. Summer Nuclear Station, Unit No. 1 (Summer Station), Technical Specifications (TS) regarding surveillance testing of new replacement Class 1E batteries. The requested changes would modify Surveillance Requirement 4.8.2.1 and the associated Bases section 3/4 8-2 for the new replacement batteries installed to meet the requirements of Regulatory Guide 1.155, Station Blackout.

2.0 EVALUATION

The Station Blackout (SBO) Rule, 10 CFR 50.63, requires that each light water cooled nuclear power plant be able to withstand and recover from an SBO for a specified duration. The licensee initially stated that the Class 1E batteries were determined to have sufficient capacity to meet SBO loads for 4 hours, assuming that loads not needed to cope with the SBO would be stripped. Subsequently, in a submittal dated April 17, 1989, the licensee stated that load stripping to extend the battery capacity to meet the 4-hour SBO coping duration was not considered prudent. The licensee informed the staff by letter dated October 2, 1989, that it would replace the existing batteries with higher capacity batteries in order to meet the subject SBO coping duration without the requirement to manually strip loads.

The licensee recently (Spring 1990) installed two higher capacity Class 1E batteries. The new Class 1E batteries were sized to meet the more restrictive SBO load demand under the most limiting battery conditions. These conditions are (1) a minimum electrolyte temperature of 60°F, (2) a minimum capacity derating factor for aging and temperature of 80%, and (3) 58 out of the 60 installed cells connected. Each battery is rated at 2175 ampere-hours. Section 8.3.2.1.3 of the Summer Station Final Safety Analysis Report states that 860 ampere-hours represents the worst

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case load demand in the event of a design basis accident or ant SBO of 4-hour duration. The licensee proposes the following changes be made to reflect the revised engineering criteria used to size the new batteries:

(1) Change TS 4.8.2.1.b.3 to specify an average electrolyte temperature greater than or equal to 60°F rather than 65°F. The basis for this surveillance requirement is to verify that the average electrolyte temperature is above the minimum value for which the battery is sized given the manufacturer's recommendations for acceptable operating temperatures. Since the licensee states that the minimum electrolyte temperature used for sizing the replacement batteries was 60°F, we find the change consistent with the original intent of the surveillance requirement. Therefore, the change is acceptable.

(2) Change TS 4.8.2.1.e to specify that the minimum battery capacity to be verified by test is at least 80% rather than 90% of the manufacturer's rating. The proposed acceptance criteria is consistent with Institute of Electrical and Electronics Engineers (IEEE) Standard 450-1987 and IEEE Standard 485-1983 recommendations. It is recommended that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity factor of 80% is indicative of an increased rate of deterioration even if there is ample capacity to meet the load requirements. We find that this change does not affect the original intent of the surveillance requirement and is, therefore, acceptable.

(3) Change the Bases B 3/4 (page 8-2) industry reference citation from IEEE Standard 450-1980 to IEEE Standard 450-1987. This change is editorial in nature and does not affect the original intent of the Bases reference. The change is, therefore, acceptable.

3.0 SUMMARY

We have reviewed the licensee's submittal and have concluded that the changes reflect the revised design basis for the replacement Class 1E batteries. The licensee stated that the new batteries are sized larger than required with the subject calculations considering all correction factors for aging, design margin and operating temperatures as recommended in IEEE Standard 485. We find that the subject changes meet the original intent for the existing Technical Specification requirements and are, therefore, 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 and changes surveillance requirements. 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 37590). 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: R. Jenkins

Date: April 17, 1992