

August 16, 2005

Mr. Jeffery Archie
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88
Jenkinsville, South Carolina 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1 - ISSUANCE OF
AMENDMENT RE: EMERGENCY FEEDWATER SYSTEM PUMP TESTING
CRITERIA (TAC NO. MC4336)

Dear Mr. Archie:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 173 to Renewed Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1. The amendment changes the Technical Specifications (TSs) in response to your application dated August 24, 2004, as supplemented on August 10, 2005. This amendment revises TSs related to the surveillance requirements for the emergency feedwater system.

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

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosures:

1. Amendment No. 173 to NPF-12
2. Safety Evaluation

cc w/enclosures: See next page

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SOUTH CAROLINA ELECTRIC & GAS COMPANY

SOUTH CAROLINA PUBLIC SERVICE AUTHORITY

DOCKET NO. 50-395

VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 173
Renewed 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 August 24, 2004, as supplemented on August 10, 2005, 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 Renewed 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. 173, 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

/RA/

Evangelos C. Marinos, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: August 16, 2005

ATTACHMENT TO LICENSE AMENDMENT NO.173
TO RENEWED FACILITY OPERATING LICENSE NO. NPF-12
DOCKET NO. 50-395

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove Pages

3/4 7-4
B 3/4 7-2

Insert Pages

3/4 7-4
B 3/4 7-2

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 173 TO

RENEWED 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 application dated August 24, 2004, as supplemented on August 10, 2005, South Carolina Electric & Gas Company (SCE&G, the licensee) requested changes to the Technical Specifications (TSs) for the Virgil C. Summer Nuclear Station (VCSNS).

The licensee proposed revisions to Surveillance Requirements (SR) 4.7.1.2.a.1 and 4.7.1.2.a.2 to reflect a more representative model of the Emergency Feedwater (EFW) System. The new EFW model has produced revised pump characteristics and requires more stringent acceptance criteria for the EFW surveillance test to ensure that the design requirements of the EFW system are met. The licensee proposed that these criteria be converted into TS acceptance criteria. The proposed TS acceptance criteria are more conservative than those currently in the VCSNS TSs. The licensee has also submitted associated revisions to the TS Bases to revise Bases Section B3/4.7.1.2 to reflect the new criteria provided by the new model.

The proposed TS changes would:

- Revise SR 4.7.1.2.a.1 to require a total developed head of greater than or equal to 3800 feet at greater than or equal to 90 gallons per minute (gpm) flow for the motor driven EFW pumps instead of the previous requirement of a developed pressure of 1600 pounds per square inch gauge (psig) at greater than or equal to 90 gpm flow.
- Revise SR 4.7.1.2.a.2 to require a total developed head of greater than or equal to 3140 feet at greater than or equal to 97 gpm flow when the secondary steam supply pressure is greater than 865 psig for the steam turbine driven EFW pump instead of the previous requirement of a developed pressure of 1330 psig at greater than or equal to 97 gpm flow when the secondary steam supply pressure is greater than 865 psig.

- Revise Bases 3/4.7.1.2 to clarify that the EFW system is capable of providing sufficient flow to ensure that the pressurizer does not overfill during a loss of normal feedwater event and that the total head criteria includes a margin that allows for EFW flow control valve leakage of 5 gpm for one of the six EFW flow control valves.

The August 10, 2005, supplemental letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination or expand the scope of the application.

2.0 REGULATORY EVALUATION

Pursuant to Title 10, *Code of Federal Regulations* (10 CFR), Section 50.90, "Application for Amendment of License or Construction Permit," SCE&G has proposed an amendment to the VCSNS TSs.

It specifies in 10 CFR 50.36(c)(2)(ii)(C), Criterion 3, that TS limiting conditions for operation (LCO) be established for a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier. Since the EFW system is designed to mitigate the consequences of any loss of main feedwater event, VCSNS's TS LCO 3.7.1.2 is established to require its operability in compliance with Criterion 3. As stipulated in 10 CFR 50.36(c)(3), surveillances will be performed to ensure that the necessary systems and components are being maintained, that the operation of the facility will be within safety limits and that the LCO's will be met. SR 4.7.1.2.a.1 and SR 4.7.1.2.a.2, respectively, require verification of the operability of the motor-driven and turbine-drive EFW pumps. This is accomplished by meeting the criteria of developed head and flow rate. The licensee proposes to revise the EFW pump surveillance test by using a more stringent head criterion to assure that adequate pump characteristics are met and, therefore, ensure compliance with 10 CFR 50.36 (c)(3).

Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications that are Insufficient to Assure Plant Safety," states that if a nonconservatism is discovered in the TSs, the licensee may take administrative control of the issue while processing a TS change to resolve the issue. Upon discovering that the current surveillance acceptance criteria of the EFW pump head specified in SR 4.7.1.2.a.1 and SR 4.7.1.2.a.2, respectively, are inadequate, the licensee has relied on administrative controls to adopt more stringent criteria until the license amendment application is accepted to change the respective SRs. The NRC staff finds this to be consistent with AL 98-10, and to be acceptable.

3.0 TECHNICAL EVALUATION

The Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's technical analyses in support of its proposed license amendment, which are described in Section 4 of the licensee's submittal (Agencywide Documents Access and Management System No. ML042390441). The new EFW pump head specified in the proposed SR 4.7.1.2.a.1 and SR 4.7.1.2.a.2, respectively, is based on the new EFW system model calculations that result in more stringent EFW pump characteristics and, therefore, a more stringent head requirement for the surveillance tests.

The licensee also proposes to change the units used to measure the operability of the EFW pumps from psig to feet of total developed head. Total developed head is equal to the discharge head minus the suction head. The suction head for the EFW pumps is provided by the Condensate Storage Tank (CST).

In order to determine the total developed head, the licensee will first have to record the discharge pressure in psig from the discharge pressure gauge on the EFW pump being examined. This discharge pressure will then have to be converted to the units of feet. The suction pressure in units of feet will have to be determined and, therefore, the level in the CST will have to be measured. Thus, using the concept of total developed head to measure the operability of the EFW pumps will eliminate the effect that varying CST levels previously had on surveillance testing. The current acceptance criteria, measured in terms of psig, are dependant on the level of the CST with greater margin available when the CST is full. The licensee provided quantitative results in its response to a request for additional information (RAI) number one, dated August 10, 2005, that supports the licensee's conclusions in this regard. The NRC staff finds that eliminating the effect that varying CST levels previously had on surveillance testing enhances the surveillance since it focuses the test results on pump performance, independent of whatever level the CST may be at due to plant operation activities.

The current acceptance criteria require a discharge pressure of greater than or equal to 1600 psig for the motor driven pumps and a discharge pressure of greater than or equal to 1330 psig for the steam turbine driven pump. In order to convert these values into equivalent values of feet, a multiplication factor of 2.31 is used for a system of water. This yields values of 3696 feet for the motor driven pumps and 3072 feet for the turbine driven pump.

The licensee has proposed to set the acceptance criteria at 3800 feet of total developed head for the motor driven EFW pumps and 3140 feet of total developed head for the steam turbine driven EFW pump. Utilizing the concept of total developed head, it can be seen that if the total developed head has a minimum value of 3800 feet or 3140 feet, then the discharge pressure must at all times be greater than the minimum value for total developed head. Therefore, the licensee's request is conservative and will not result in a reduction in flow.

The licensee provided additional information on the methodology, including the software, the calculation process and the development of the new pump curves, to determine the revised pump parameters. The licensee stated that it had performed validation testing of the software and found no technical errors associated with it. As shown in the figure for the turbine driven pump in the licensee's submittal dated August 10, 2005, the licensee presented a new surveillance requirement pump curve that is considered to be more conservative than the previous pump curve. Although, the NRC staff did not perform further independent confirmatory analysis of the licensee's methodology, the NRC staff considered the methodology to be reasonable for the application identified by the licensee in this case. On these bases, the NRC staff finds the licensee's proposed changes to be acceptable.

The NRC staff has reviewed the licensee's amendment application to revise the surveillance acceptance criteria for the EFW pump head specified in SR 4.7.1.2.a.1 and SR 4.7.1.2.a.2, respectively, to update the TSs with more conservative values. On the basis of the above regulatory and technical evaluations, the NRC staff concludes that the licensee's proposed TS changes are acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment 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 (69 FR 60685, October 12, 2004). 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.

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Date: August 16, 2005

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