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SCE&G®
A SCANA COMPANY

August 11, 2011
RC-11-0104

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSE AMENDMENT REQUEST - LAR (10-03107)
PROPOSED CHANGE TO ADMINISTRATIVE CONTROLS SECTION TO ALLOW THE USE OF WESTINGHOUSE WCAP-12472-P-A, ADDENDUM 1-A

References:
1. Westinghouse WCAP-12472-P-A, Addendum 1-A, "BEACON Core Monitoring and Operations Support System, January 2000, (W Proprietary)
2. Westinghouse WCAP-12473-A, Addendum 1-A, "BEACON Core Monitoring and Operations Support System, January 2000, (W Non-Proprietary) (ML003678190)

Pursuant to 10 CFR 50.90, South Carolina Electric & Gas Company (SCE&G), requests an amendment to the Virgil C. Summer Nuclear Station (VCSNS) Unit 1 Facility Operating License NPF-12. SCE&G proposes to revise Technical Specification (TS) 6.9.1.11, "Core Operating Limits Report", to reference and allow use of Westinghouse WCAP-12472-P-A, Addendum 1-A (Reference 1). The non-proprietary version is WCAP-12473-A, Addendum 1-A (Reference 2).

The proposed TS change to add Addendum 1-A will update WCAP-12472-P-A, "BEACON Core Monitoring and Operations Support System", August 1994, (W Proprietary) which was approved for use at VCSNS under License Amendment No. 142. This update allows the use of the three-dimensional Advanced Nodal Code (ANC) neutronic model in BEACON in place of SPNOVA.

SCE&G's evaluation of the proposed change is provided in Attachment I to this letter. This attachment also provides a description of the proposed change and the regulatory basis for the change. SCE&G has determined that there are no significant hazards considerations associated with the proposed change.

The VCSNS Final Safety Analysis Report has been reviewed and requires revisions to Sections 4, 7 and 15. These changes will be processed after implementation of this LAR.

SCE&G requests approval of the proposed amendment by July 30, 2012, with a 90-day implementation period to permit plant program changes. The proposed amendment has been reviewed by the appropriate VCSNS review committees. SCE&G has notified the State of South Carolina in accordance with 10CFR50.91.

A001
NRR

If you have any questions or require additional information, please contact Bruce Thompson at (803) 931-5042.

I certify under penalty of perjury that the information contained herein is true and correct.

8/11/11
Executed on

Thomas D. Gatlin

GAR/TDG/xx

Attachments:
I. Licensee's Evaluation
II. Marked Up TS Page
III Retyped TS Page
IV. Commitment Page

c: K. B. Marsh
S. A. Byrne
J. B. Archie
N. S. Carns
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S. J. Threatt
NSRC
RTS (CR-10-03107)
File (813.20)
PRSF (RC-11-0104)

ATTACHMENT i

LICENSEE'S EVALUATION

Subject: License Amendment Request - LAR (10-03107) Proposed Change to *Administrative Controls Section to Allow the Use of Westinghouse* WCAP-12472-P-A, ADDENDUM 1-A

1. DESCRIPTION

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3. BACKGROUND

4. TECHNICAL ANALYSIS

5. REGULATORY SAFETY ANALYSIS

   5.1 No Significant Hazards Consideration

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6. ENVIRONMENTAL CONSIDERATION

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1.0 DESCRIPTION

This letter is a request to amend Operating License No. NPF-12 for the V. C. Summer Nuclear Station (VCSNS).

The proposed change would revise the Operating License to reference and allow use of WCAP-12472-P-A, Addendum 1-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," January 2000 (W Proprietary) (Ref.2). This addendum will update the BEACON core monitoring program by allowing the use of the three-dimensional Advanced Nodal Code (ANC) neutronic model.

2.0 PROPOSED CHANGE

The proposed license amendment will revise Technical Specification 6.9.1.11 to reference WCAP-12472-P-A, Addendum 1-A for use with WCAP-12472-P-A (Ref. 1). The addition of this addendum will upgrade the BEACON power distribution monitoring methodology to incorporate the use of the three-dimensional Advanced Nodal Code (ANC) neutronic model.

The BEACON core monitoring methodology was approved for use at VCSNS under license amendment number 142. Originally the BEACON system utilized the SPNOVA nodal method to calculate the three dimensional core power distribution. SPNOVA is a simplified diffusion equation code which was used due to limited computational power of early vintage work stations. Due to advancements in work stations and improvement in numerical solution technique of the nodal expansion method, the BEACON core monitoring system can now be upgraded to use the three-dimensional ANC neutronic model described in WCAP-12472-P-A, Addendum 1-A.

In summary, the Operating License is being revised to reference and allow use of WCAP-12472-P-A, Addendum 1-A to upgrade the BEACON core monitoring system.

Since this change is being made to the Administrative Controls Section 6.9.1.11 of the Technical Specifications, there are no Bases changes required.

3.0 BACKGROUND

The Best Estimate Analyzer for the Core Operations-Nuclear (BEACON) system was developed by Westinghouse to improve the operational support for pressurized-water reactors (PWRs). It is a core monitoring and support package that uses Westinghouse standard instrumentation in conjunction with an analytical methodology for on-line

generation of three-dimensional power distributions. The system provides core monitoring, core measurement reduction, core analysis, and core predictions. The main Topical Report, WCAP-12472-P-A, "BEACON Core Monitoring and Operations Support System," was approved by the NRC staff on February 16, 1994. Topical Report WCAP12472-P, Addendum 1-A was approved by the NRC Staff on September 30, 1999. It extends the previously licensed BEACON power distribution monitoring methodology to incorporate the use of the three-dimensional Advanced Nodal Code (ANC) neutronic model into BEACON in place of SPNOVA.

4.0 TECHNICAL ANALYSIS

Use of the ANC neutronic model code in the BEACON system in place of SPNOVA was a desirable option since the beginning of development of BEACON. However, computational power limitation of the early vintage workstations necessitated the development of a simplified diffusion equation code for required functionality of the BEACON system. Recent workstation advancements, coupled with the improvement in numerical solution techniques has permitted the use of the three dimensional ANC neutronic model code in the BEACON system while maintaining BEACON functionality.

To allow the use of the ANC neutronic model code in the BEACON system, Technical Specification Section 6.9.1.11 is being revised to reference WCAP-12472-P-A, Addendum 1-A.

A primary function of the BEACON core monitoring system is the determination of the three dimensional core power distribution. In BEACON (WCAP-12472-P-A), this calculation was performed with the NRC-approved Westinghouse SPNOVA nodal method. The ANC neutronic model and cross section methodology is a proven and licensed methodology that is supported by many critical experiments and plant data. The method is based on basic neutron physics and avoids (as much as possible) the use of empirical correlations and data. Another advantage of utilizing the ANC methodology is that the method can be applied to a wider range of design/operating conditions.

The determination of the uncertainties on the measured power is affected by such things as the detector measurement variability, the number and layout of detectors, interpolation techniques, and any differences between predicted and true power distribution. The methodology for developing these uncertainties was presented and approved in the Topical Report WCAP-12472-P-A. The details of the uncertainty methodology are unchanged by the addendum and still described in Topical Report WCAP-12472-P-A.

Applicable sections (4, 7 and 15) of the Final Safety Analysis Report (FSAR) which reference the BEACON core monitoring system and the WCAP will be revised to reflect the addition of WCAP-12472-P-A, Addendum 1-A.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

South Carolina Electric & Gas Company (SCE&G) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The Technical Specification change represents a change in approved methodology. The change has no impact on the probability of occurrence or consequences of any design basis accident. The change in approved methodology does not involve any alterations to plant equipment or procedures which would affect any operational modes or accident precursors. Therefore, the change has no effect on the probability of occurrence of previously evaluated accidents and has no effect on the consequences of previously evaluated accidents.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The Technical Specifications changes represent a change in approved methodology and will not create the possibility of a new or different type of accident from any accident previously evaluated. All design and performance criteria will continue to be met and no new single-failure mechanisms will be created. The change in methodology does not involve any alterations to plant equipment or procedures which would introduce any new or unique operational modes or accidents precursors. Therefore a new or different type of accident from any accident previously evaluated is not created.

3. Does the proposed change involve a significant reduction in the margin of safety?

Response: No.

The change in methodology does not change the proposed reload design or safety analysis limits for each cycle reload core. The associated margin of safety will be specifically evaluated using approved reload design methods. Since the safety analysis limits are unaffected, and cycle specific analyses will show that the analysis limits are met, the change in methodology will have no impact on the margin of safety.

5.2 Applicable Regulatory Requirements/Criteria

Technical Specification 6.9.1.11 requires that the core operating limits be established and documented in the Core Operating Limits Report prior to each reload cycle. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC. WCAP-12472-P-A for the BEACON core monitoring system is identified as an approved analytical method. WCAP-12472-P-A, Addendum 1-A has been reviewed and approved in an NRC Safety Evaluation (Ref. 3) as an acceptable analytical method for use with the BEACON core monitoring system. Therefore, a license amendment is being pursued under 10 CFR 50.90 (Ref. 4) to incorporate this addendum.

6.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment is confined to changes to administrative procedures or requirements. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(10). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. WCAP-12472-P-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," August 1994, (W Proprietary).

2. WCAP-12472-P-A, Addendum 1-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," January 2000 (W Proprietary).

3. NRC Letter from Stephen Dembek, Chief, Section 2, Project Directorate IV and Decommissioning Division of Licensing Project Management, Office of Nuclear Reactor Regulation to H. A. Sapp, Manager Regulatory and Licensing Engineering, Westinghouse Electric Corporation, "Acceptance for Referencing of Licensing Topical Report WCAP-12472-P-A, Addendum 1-A, "BEACON Core Monitoring and Operation Support System," dated September 30, 1999.

4. 10 CFR 50.90, "Application for amendment of license, construction permit or early site permit."

VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)

ATTACHMENT II

PROPOSED TECHNICAL SPECIFICATION CHANGE (MARK-UP)

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	Insert Pages
6-16A	6-16A

WCAP-12472-P-A, Addendum 1-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," January 2000, (W Proprietary).

CORE OPERATING LIMITS REPORT (Continued)

c. WCAP-12945-P-A, Volume 1 (Revision 2) through Volumes 2 through 5 (Revision 1) "Code Qualification Document for Best Estimate LOCA Analysis," March 1998 (Westinghouse Proprietary).

Liparulo, N. (W) to NRC Document Control Desk, NSD-NRC-96-4746, "Re-Analysis Work Plans Using Final Best Estimate Methodology" dated 6/13/1996.

(Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

d. WCAP-12472-P-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," August 1994, (W Proprietary).

(Methodology for Specifications 3.2.2 - Heat Flux Hot Channel Factor, 3.2.3 - RCS Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor, and 3.2.4 - Quadrant Power Tilt Ratio.)

e. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997, (Westinghouse Proprietary).

(Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient.)

f. WCAP-12610-P-A, "VANTAGE + Fuel Assembly Reference Core Report," April 1995 (W Proprietary). WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006 (W Proprietary).

(Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, nuclear limits such as shutdown margin, and transient and accident analysis limits) of the safety analysis are met.

The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements there to shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)

ATTACHMENT III

PROPOSED TECHNICAL SPECIFICATION CHANGE (RETYPED)

CORE OPERATING LIMITS REPORT (Continued)

c. WCAP-12945-P-A, Volume 1 (Revision 2) through Volumes 2 through 5 (Revision 1) "Code Qualification Document for Best Estimate LOCA Analysis," March 1998 (Westinghouse Proprietary).

Liparulo, N. (W) to NRC Document Control Desk, NSD-NRC-96-4746, "Re-Analysis Work Plans Using Final Best Estimate Methodology" dated 6/13/1996.

(Methodology for Specification 3.2.2 - Heat Flux Hot Channel Factor.)

d. WCAP-12472-P-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," August 1994, (W Proprietary).

WCAP-12472-P-A, Addendum 1-A, "BEACON CORE MONITORING AND OPERATIONS SUPPORT SYSTEM," January 2000, (W Proprietary)

(Methodology for Specifications 3.2.2 - Heat Flux Hot Channel Factor, 3.2.3 - RCS Flow Rate and Nuclear Enthalpy Rise Hot Channel Factor, and 3.2.4 - Quadrant Power Tilt Ratio.)

e. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997, (Westinghouse Proprietary).

(Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient.)

f. WCAP-12610-P-A, "VANTAGE + Fuel Assembly Reference Core Report," April 1995 (W Proprietary). WCAP-12610-P-A & CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™," July 2006 (W Proprietary).

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The CORE OPERATING LIMITS REPORT, including any mid-cycle revisions or supplements there to shall be provided upon issuance, for each reload cycle, to the NRC Document Control Desk with copies to the Regional Administrator and Resident Inspector.

VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)

ATTACHMENT IV

LIST OF REGULATORY COMMITMENTS

The following table identifies those actions committed to by SCE&G, Virgil C. Summer Nuclear Station in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Bruce L. Thompson, Manager, Nuclear Licensing, (803) 931-5042.

COMMITMENT	Due Date/Event
None.	N/A