



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

January 18, 2017

Mr. George A. Lippard, III
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88, Mail Code 800
Jenkinsville, SC 29065

**SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1 – ISSUANCE OF
AMENDMENT TO REVISE TECHNICAL SPECIFICATION 3.5.4 LIMITING
CONDITION FOR OPERATION REFUELING WATER STORAGE TANK
(CAC NO. MF8310)**

Dear Mr. Lippard:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 207 to Renewed Facility Operating License No. NPF-12 for the Virgil C. Summer Nuclear Station, Unit No. 1, in response to your application dated August 29, 2016.

This amendment approves a deletion of an expired Note related to administrative controls associated with the Limiting Condition for Operation (LCO) of Technical Specification (TS) 3.5.4, "Refueling Water Storage Tank" for Virgil C. Summer Nuclear Station, Unit No. 1.

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

Sincerely,

A handwritten signature in black ink, reading "Shawn Williams", is positioned above the typed name.

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosures:

1. Amendment No. 207 to NPF-12
2. Safety Evaluation

cc w/Enclosures: Distribution via Listserv



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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. 207
Renewed License No. NPF-12

1. The U.S. 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), Renewed Facility Operating License No. NPF-12 filed by the South Carolina Electric & Gas Company (the licensee), dated August 29, 2016, 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 as set forth in 10 CFR Chapter I;
 - 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.

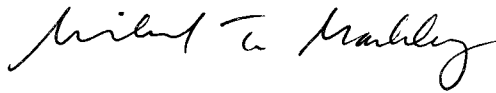
2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-12 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 207, 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 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Michael T. Markley, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to Renewed Facility
Operating License and
Technical Specifications

Date of Issuance: January 18, 2017

VIRGIL C. SUMMER NUCLEAR STATION, UNIT NO. 1

ATTACHMENT TO LICENSE AMENDMENT NO. 207

RENEWED FACILITY OPERATING LICENSE NO. NPF-12

DOCKET NO. 50-395

Replace the following page of the Renewed Facility Operating License and Appendix "A" Technical Specifications (TSs) with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

Insert

License

License

Page 3

Page 3

TSs

TSs

3/4 5-9

3/4 5-9

- (3) SCE&G, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage amounts required for reactor operation, as described in the Final Safety Analysis Report, as amended through Amendment No. 33;
- (4) SCE&G, pursuant to the Act and 10 CFR Part 30, 40 and 70 to receive, possess and use at any time byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed neutron sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) SCE&G, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus of components; and
- (6) SCE&G, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as m[a]y be produced by the operation of the facility.

C. This renewed license shall be deemed to contain, and is subject to, the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

SCE&G is authorized to operate the facility at reactor core power levels not in excess of 2900 megawatts thermal in accordance with the conditions specified herein and in Attachment 1 to this renewed license. The preoccupation tests, startup tests and other items identified in Attachment 1 to this renewed license shall be completed as specified. Attachment 1 is hereby incorporated into this renewed license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 207, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the renewed license. South Carolina Electric & Gas Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

EMERGENCY CORE COOLING SYSTEMS

3/4.5.4 REFUELING WATER STORAGE TANK

LIMITING CONDITION FOR OPERATION

3.5.4 The refueling water storage tank (RWST) shall be OPERABLE with:

- a. A minimum contained borated water volume of 453,800 gallons,
- b. A boron concentration of between 2300 and 2500 ppm of boron, and
- c. A minimum water temperature of 40°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

With the refueling water storage tank inoperable, restore the tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.5.4 The RWST shall be demonstrated OPERABLE:

- a. At least once per 7 days by:
 1. Verifying the contained borated water volume in the tank, and
 2. Verifying the boron concentration of the water.
- b. At least once per 24 hours by verifying the RWST temperature when the outside air temperature is less than 40°F.



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 207 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 letter dated August 29, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16243A463), South Carolina Electric & Gas Company (SCE&G) submitted a License Amendment Request (LAR) to modify the Virgil C. Summer Nuclear Station (VCSNS), Unit No. 1, Technical Specifications (TSs). The proposed change to the VCSNS TSs would revise TS Limiting Condition for Operation (LCO) 3.5.4, "Refueling Water Storage Tank." The LAR requests to delete an expired Note to TS LCO 3.5.4 that permitted periodic connection of the Refueling Water Storage Tank (RWST) to non-safety piping for surveillance testing and water filtration under administrative controls.

2.0 REGULATORY EVALUATION

2.1 System Description

The RWST is a structure included in the spent fuel pool cooling system described in Section 9.1.3 of the VCSNS Updated Final Safety Analysis Report (UFSAR) updated through May 31, 2016 (ADAMS Package Accession No. ML16166A068). It is a Seismic Category 1, safety-related tank in an open Seismic Category 1 structure. The purification loop of the spent fuel pool cooling system is connected to the RWST to allow for water transfer between the RWST and water storage volumes associated with refueling, such as the reactor cavity in the reactor building and the fuel transfer canal in the fuel building. The purification system also allows for recirculation and filtration of the RWST water.

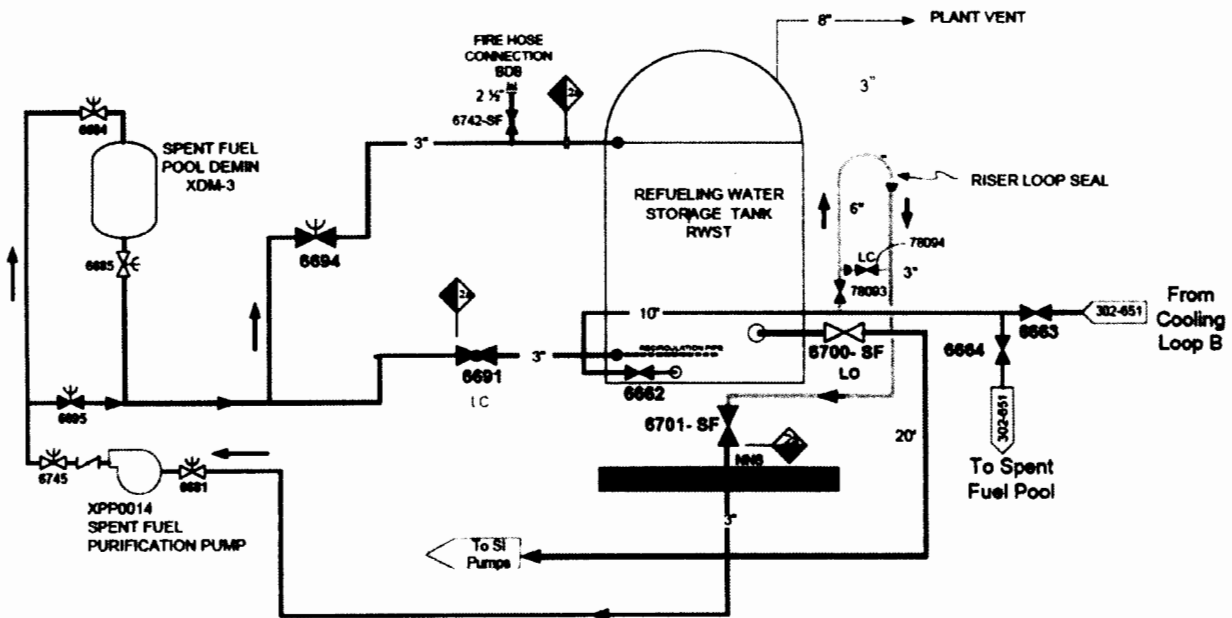
Section 6.3.2.6, "Coolant Quantity," of the VCSNS UFSAR provides a description of the RWST inventory necessary for injection after reactor coolant system pipe ruptures and to provide adequate net positive head for emergency core cooling system pump operation. The necessary coolant inventory includes the required injection volume, allowance for level instrument error, a working allowance including volume removed during switch-over to containment sump recirculation, and the unusable volume below the critical vortex level. Table 6.3-9, "Emergency Core Cooling System Shared Functions Evaluation," of the VCSNS UFSAR states that the RWST outlet piping is normally aligned to the suction of the residual heat removal pumps, and a safety injection actuation for a loss of coolant accident automatically aligns the suction of the centrifugal charging pumps to the RWST outlet.

2.2 Amendment Request Scope

By letter dated June 29, 2012 (ADAMS Accession No. ML121850005), SCE&G requested an amendment to VCSNS TS 3.5.4 that added a note permitting periodic connection of non-safety related piping to the RWST under administrative controls for boron sampling to satisfy TS Surveillance Requirement (SR) 4.5.4.a.2 and for filtration of the RWST inventory to ensure clarity of the water used for refueling operations. By letter dated October 12, 2012 (ADAMS Accession No. ML12270A301), the U.S. Nuclear Regulatory Commission issued Amendment 192 to the VCSNS operating license. The amendment changed TS LCO 3.5.4 by adding a note permitting the periodic connection of non-safety related piping to the RWST for the requested purposes under administrative controls. As requested, the administrative controls specified in the TS note included time restrictions and prohibited use of the connections to non-safety related piping after Refueling Outage 22 (fall 2015).

Since the issuance of Amendment 192, SCE&G has implemented a modification to prevent a loss of RWST inventory below the required level for operability in the event of failure of non-safety related piping while using the spent fuel purification system to recirculate or filter the RWST water. The modification included installation of a seismically qualified, safety-related raised loop seal in the suction line from the RWST to the spent fuel purification system. The top of the raised loop seal is connected by piping to the main RWST vent. The modification is shown in the below diagram of the RWST and connected piping, which was provided as Attachment 5 to the LAR.

Spent Fuel Pit Cooling Purification Loop RWST Riser Loop Seal



The modification and administrative controls on certain valve positions in operating modes 1 through 4 protect the required TS RWST coolant inventory from loss in the event of a failure of non-safety spent fuel purification system piping. In the unlikely event of a failure of the non-safety related purification system piping, the elevation of the upper return line RWST tank penetration and the siphon break provided by the vent in the raised loop seal would prevent loss of inventory through these lines below the TS required level. The licensee verified the siphon break would function to prevent inventory loss without operator action during post-modification testing. Administrative controls that require maintaining safety-related valves in the lower purification system return line and the loop seal bypass lines in the locked closed position when TS LCO 3.5.4 is applicable (operational modes 1, 2, 3, and 4) provide assurance that only the upper purification return line and the raised loop seal would connect the RWST with the non-safety related portions of the purification system.

The proposed change to TS 3.5.4 LCO would remove the note added by License Amendment 192 and revise the TS bases to reflect the necessary valve alignment to preserve the minimum required RWST inventory in the event of piping failure in the non-safety related purification system when it is connected to the RWST.

2.3 Regulatory Criteria

The proposed license amendment involves a change to the content of the TSs. The staff reviewed the proposed TS changes for compliance with applicable regulations and conformance with associated regulatory guidance.

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.34(b), "Final Safety Analysis Report," requires that each application for an operating license include a final safety analysis report providing information that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components and of the facility. Required information concerning facility operation includes TSs prepared in accordance with 10 CFR 50.36.

The requirements of 10 CFR 50.36 specify that each Operating License issued by the Commission contain TSs that include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO included in the TSs is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met. This regulation also requires that a summary statement of the bases or reasons for such specifications shall also be included in the application, but shall not become part of the technical specifications.

Guidance for staff review of TSs is contained in Section 16.0, "Technical Specifications," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition." This guidance specifies that the staff review whether content and format are consistent with the applicable Standard Technical Specifications (STS). Where TS provisions depart from the reference TSs, the staff determines whether proposed differences are justified by uniqueness in plant design or other considerations.

The applicable STS for VCSNS are contained in NUREG-1431, "Standard Technical Specifications - Westinghouse Plants," Revision 4.0. The requested change is unique to the VCSNS TS and, therefore, the STS included in NUREG-1431 are not relevant to this LAR.

General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," of Appendix A to 10 CFR Part 50, establishes the requirement that structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunamis, and seiches without loss of capability to perform their safety functions.

3.0 TECHNICAL EVALUATION

The licensee requested to remove a Note from TS 3.5.4 that expired after Refueling Outage 22 (fall 2015). The Note permitted periodic connection of the RWST to non-safety piping for surveillance testing and water filtration under administrative controls. The note also provided restrictions on the operation of the purification system to recirculate the RWST coolant inventory to support accurate boron sampling required by TS SR 4.5.4.a.2 and to filter RWST inventory to support safe refueling operations when the reactor was in operating modes 1, 2, 3, or 4. These restrictions reduced the potential for failure of non-safety related purification system piping to drain the RWST below the minimum required by TS LCO 3.5.4 during operating modes 1, 2, 3, or 4.

During Refueling Outage 22 (fall 2015), SCE&G implemented a permanent plant modification under 10 CFR 50.59 that replaces the requirement for the Note. SCE&G installed a seismically qualified, safety-related riser loop seal from the RWST and added administrative controls that

lock closed the purification system safety-related lower return line isolation valve and raised the loop seal bypass valve, eliminating the potential for loss of RWST inventory below the minimum required by TS LCO 3.5.4.

The licensee included in the application the proposed changes to the TS bases for TS 3.5.4. The TS bases demonstrates that the RWST connections can be maintained in a configuration that satisfies GDC 2 while permitting operation of the purification system for performance of TS SR 4.5.4.a.2 and filtration of the RWST inventory in operating modes 1, 2, 3, and 4.

3.3 NRC Staff Conclusion

The proposed changes to TS LCO 3.5.4 eliminate restrictions on RWST connection to the purification system in operating modes 1, 2, 3, and 4 have become unnecessary following implementation of the plant modification installing a raised loop seal on the purification system suction line from the RWST. The staff found this change acceptable because the modification allows the system to be configured such that the requirements of GDC 2 are maintained with respect to maintaining RWST inventory during recirculation or filtering of the RWST. This plant-specific change to the design has eliminated the basis for the TS LCO 3.5.4 note, and, therefore, the note may be deleted consistent with the requirements of 10 CFR 50.36 and the guidance of Standard Review Plan Section 16.0. The safety analysis provided in the proposed bases to TS 3.5.4 present the design basis information supporting operation of the purification system for RWST recirculation and filtering in operating modes 1, 2, 3, and 4, consistent with the requirements of 10 CFR 50.34.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 published in the *Federal Register* on October 11, 2016 (81 FR 70183), and there has been no public comment on such finding. 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) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Steve Jones, NRR

Date: January 18, 2017

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Mr. George A. Lippard, III
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88, Mail Code 800
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Sincerely,

/RA/

Shawn A. Williams, Senior Project Manager
Plant Licensing Branch II-1
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ADAMS Accession No.: ML16348A200

*by internal memo

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NAME	SWilliams	KGoldstein	BDennig	AKlein
DATE	1/4/17	12/21/16	12/7/16	1/11/17
OFFICE	OGC-NLO	DORL/LPL2-1/BC	DORL/LPL2-1/PM	
NAME	BHarris	MMarkley	SWilliams	
DATE	1/3/17	1/18/17	1/18/17	

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