December 28, 2007

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 — GENERIC LETTER 2004-02 "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED WATER REACTORS" EXTENSION REQUEST APPROVAL (TAC NO. MC4721)

Dear Mr. Archie:

The U.S. Nuclear Regulatory Commission (NRC) staff has evaluated the information provided in South Carolina Electric and Gas Company's (SCE&G's) letter dated December 21, 2007, (Agencywide Documents Access Management Systems No. ML073601006), supporting a request for an extension of the Virgil C. Summer Nuclear Station (VCSNS), sump clogging corrective actions due date of December 31, 2007, as stated in Generic Letter (GL) 2004-02 "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors."

SCE&G stated that it has taken actions, as described in its letters dated March 7, 2005 (ML050690207), and September 1, 2005 (ML052520333), toward bringing VCSNS into compliance with GL 2004-02, including replacing the sump screens with substantially larger sump strainers. The new strainers have a surface area that is more than 50 times greater than the originally installed strainers. SCE&G stated that the system design will allow the reactor building spray pumps and residual heat removal pumps to meet the long term cooling requirements under Title 10, *Code of Federal Regulations*, Section 50.46.

SCE&G stated that it is continuing the evaluation of downstream effects (ex-vessel) utilizing Revision 1 of WCAP-16406, "Evaluation of Downstream Sump Debris Effects in Support of GSWI-191." The original downstream effects evaluation was completed in accordance with Revision 0 of WCAP-16406. The downstream effects evaluation is being updated to reflect a change in the postulated size of coatings particulate that will result in a more realistic model of particulate depletion. The updated evaluation will result in a lower depletion rate. SCE&G stated that it expects the results of the revised downstream effects evaluation to be acceptable. In addition, SCE&G stated that it is updating its paint chip transport evaluation to the metrics provided in NUREG/CR-6916. SCE&G anticipates that the updated transport evaluation will show that the large scale testing that was conducted with paint chips was conservative from a debris loading perspective.

The licensee stated that for VCSNS, it has completed modifications and supporting analyses required to resolve issues associated with potential sump strainer clogging as described in GL 2004-02. SCE&G stated that it has documented the inputs and assumptions for debris generation, debris transport, head loss determination (including chemical effect considerations),

and associated testing in an approved engineering document. This document is intended to allow evaluation of plant conditions against the analysis, and to ensure future changes to the facility may be evaluated against these design criteria.

SCE&G stated that the final downstream effects and paint chip transport evaluations will not be completed in time to allow a final submittal as a Case 1 Plant as defined in the NRC letter of November 8, 2007 (ML073060581). Therefore, SCE&G requested an extension until February 29, 2008, as a Case 2 Plant, to complete the final documentation and issue a GL 2004-02 supplemental response based on the updated information from the downstream effects and paint chip transport evaluations.

The criteria for granting an extension to the due date of December 31, 2007, for completion of GL 2004-02 corrective actions are stated in SECY-06-0078. Specifically, an extension may be granted if:

- the licensee has a plant-specific technical/experimental plan with milestones and schedule to address outstanding technical issues with enough margin to account for uncertainties, and
- the licensee identifies mitigative measures to be put in place prior to December 31, 2007, and adequately describes how these mitigative measures will minimize the risk of degraded emergency core cooling system (ECCS) and containment spray system (CSS) functions during the extension period.

In regard to the first extension criterion, VCSNS has a plant-specific technical/experimental plan, with milestones and schedules, to complete the GL 2004-02 corrective actions and modifications by February 29, 2008. Specifically, the licensee has stated that it will:

1. Complete the evaluation of downstream effects and incorporate these results into the VCSNS analysis by February 29, 2008,
2. Update the paint chip transport analysis by February 29, 2008, and verify that the large scale testing was conservative with the test debris that was used.

In regard to the second extension criterion, the licensee has stated that there are modifications, mitigative measures, compensatory measures, and/or favorable conditions in effect at VCSNS, that minimize the risk of degraded ECCS and CSS functions during the extension period. First, SCE&G stated that it has installed new sump strainers in VCSNS. The strainer area was increased by more than 50 times over the original sump screen area. In addition to providing a significant increase in strainer surface area, the licensee stated that it has incorporated several design controls to assist in maintaining debris load margins to ensure that the recirculation function will be maintained as necessary.

The NRC staff believes that SCE&G has a reasonable plan for VCSNS that should result in the completion of final Generic Safety Issue-191 evaluations that ensure acceptable strainer function with adequate margin for uncertainties. Further, the NRC staff has concluded that SCE&G has put mitigation measures in place at VCSNS to adequately reduce risk for the requested 2-month extension period. It is, therefore, acceptable to extend the completion date for certain corrective actions for the issues discussed in GL 2004-02 (specifically, the ex-vessel downstream effects and paint chip transport evaluations discussed above) until

February 29, 2008. While the NRC staff accepts this date as a reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC staff expects SCE&G to place a high priority on completing remaining actions and updating the plant's licensing basis as soon as possible.

Sincerely,

**/RA/**

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-395

cc: See next page

February 29, 2008. While the NRC staff accepts this date as a reasonable allowance for contingencies regarding completion of remaining activities to address GL 2004-02, the NRC staff expects SCE&G to place a high priority on completing remaining actions and updating the plant's licensing basis as soon as possible.

Sincerely,

**/RA/**

Robert E. Martin, Senior Project Manager
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