Thomas D. Gatlin
Vice President, Nuclear Operations
803.345.4342

SCE&G®
A SCANA COMPANY

January 9, 2014
RC-14-0002

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001
Attn: S. A. Williams

Dear Sir or Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS) UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12
LICENSE AMENDMENT REQUEST- LAR-06-00055
LICENSE AMENDMENT REQUEST TO ADOPT NFPA 805
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

References:

1. Thomas D. Gatlin, SCE&G, Letter to NRC Document Control Desk, License Amendment Request - LAR-06-00055, "License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants (2001 Edition)" dated November 15, 2011 (RC-11-0149) [ML11321A172]

2. Shawn A. Williams, NRC, to Thomas D. Gatlin "Virgil C. Summer Nuclear Station Unit - 1 (VCSNS) - Request for Additional Information (TAC NO. ME7586)" dated November 7, 2013 [ML13308B800]

3. Thomas D. Gatlin, SCE&G, Letter to NRC Document Control Desk, License Amendment Request - LAR-06-00055, "License Amendment Request to Adopt NFPA 805 Response to Request for Additional Information" dated October 10, 2012 (RC-12-0142)

4. Thomas D. Gatlin, SCE&G, Letter to NRC Document Control Desk, License Amendment Request - LAR-06-00055, "License Amendment Request to Adopt NFPA 805 Response to Request for Additional Information" dated October 14, 2013 (RC-13-0142)

South Carolina Electric & Gas Company (SCE&G), acting for itself and as agent for South Carolina Public Service Authority pursuant to 10 CFR 50.90, submitted a License Amendment Request (LAR) per Reference 1 to adopt NFPA 805. NRC review and audit of this request determined that additional information was required and a Request for

A001
NRR

Additional Information (RAI) was issued per Reference 2. Attachment 1 of this letter provides SCE&G's response to the RAIs.

If you have any questions about this submittal, please contact Mr. Bruce L. Thompson at (803) 931-5042.

I certify under penalty of perjury that the foregoing is correct and true.

1-9-2014 — Executed on

Thomas D. Gatlin

RLP/TDG/ts

Attachment:
1. Probabilistic Risk Assessment (PRA) Request for Additional Information (RAI) Responses

c: K. B. Marsh
S. A. Byrne
J. B. Archie
N. S. Carns
J. H. Hamilton
J. W. Williams
W. M. Cherry
V. M. McCree
S. A. Williams
NRC Resident Inspector
S. E. Jenkins
Paulette Ledbetter
K. M. Sutton
NSRC
RTS (CR-06-00055)
File (813.20)
PRSF (RC-14-0002)

VIRGIL C. SUMMER NUCLEAR STATION UNIT 1
DOCKET NO. 50-395
OPERATING LICENSE NO. NPF-12

ATTACHMENT

Probabilistic Risk Assessment (PRA)
Request for Additional Information (RAI) Responses

Probabilistic Risk Assessment (PRA) RAI 10.02

In a letter dated October 10, 2012 (Agencywide Document Access and Management System (ADAMS) Accession No. ML2297A218), the licensee responded to PRA RAI 10 and provided a detailed description of a series of operator actions to shutdown the facility using a preferred success path after main control room (MCR) abandonment. It appears from the response that this single human error probability (HEP) value is used for every MCR abandonment scenario.

a. **Describe whether any values other than 0.05 are used to characterize the HEP following MCR abandonment and whether the 0.05 value also represents the conditional core damage probability (CCDP).**

b. **If any values other than 0.05 are used, e.g., 1.0, provide the other values, a characterization of the scenarios that these values are used, and a summary of how each value is developed. This information should include explanations of how the following scenarios are addressed.**

    i. **Scenarios where the fire fails few functions aside from MCR habitability and successful shutdown is straightforward.**
    ii. **Scenarios where the fire could cause some recoverable functional failures or spurious operations that complicate the shutdown but successful shutdown is likely.**
    iii. **Scenarios where the fire induced failures cause great difficulty for shutdown by failing multiple functions and/or complex spurious operations that make successful shutdown unlikely.**

c. **If no values other than 0.05 are used, please explain how scenarios characterized under 10.02.b.i, 10.02.b.ii, and 10.02.b.iii are included in your MCR abandonment evaluations.**

SCE&G Response

At the time of the LAR submittal, the Human Reliability Analysis (HRA) for abandonment was based on the best available information at the time regarding the MCR abandonment procedure, with the knowledge that the procedure would be changing with the change of shutdown strategy away from the Appendix R Self Induced Station Blackout (SISBO) strategy. As discussed in the public meeting on June 20, 2013 (ADAMS Accession No. ML13170A130), SCE&G is developing new procedures associated with control room abandonment. These new procedures are being evaluated for feasibility, and an updated MCR abandonment HRA and Fire Probabilistic Risk Assessment (FPRA) modeling is underway. The new modeling uses a single HEP

value. It is part of an "OR" gate that also includes failures of instrumentation needed by the operator as a cue or indication in the MCR abandonment procedure as well as failures of equipment that results in loss of function. The effect of the updated analysis will be incorporated in the new results along with other model updates, and will be reported in a revised Attachment G and revised Attachment W. SCE&G will submit the revised LAR Attachment G "Recovery Actions Transition" along with a revised LAR Attachment W "Fire PRA Insights" by February 25, 2014.

PRA RAI 96

Regarding Fact and Observation (F&O) CF-A1-01, the licensee applies Option #2 of Task 10 of NUREG/CR-6850, "EPRI/NRC-RES Fire PRA Methodology for Nuclear Power Facilities," for circuit analysis, as recommended by the peer review. However, by NRC memorandum, "Interim Technical Guidance on Fire-Induced Circuit Failure Mode Likelihood Analysis," dated June 14, 2013 (ADAMS Accession No. ML13165A209), Option #2 "does not provide an adequate method for quantifying the likelihood of hot short-induced spurious operations." As a result, provide a sensitivity analysis, evaluating core damage frequency (CDF), large early release frequency (LERF), Delta (Δ)CDF, and ΔLERF, by substituting an acceptable method for Option #2. It should be noted that Option #1 of Task 10 of NUREG/CR-6850, absent control power transformer (CPT) credit, is an acceptable method, as well as the cited staff guidance NUREG/CR-6850.

SCE&G Response

Circuit Failure Likelihood in the V.C. Summer Fire PRA is based on use of Option 1. As noted in response PRA RAI 09 in Reference 3 dated October 10, 2012; credit for CPT was removed and sensitivity results presented. Option 2 was not used to determine Circuit Failure Likelihood in the V.C. Summer Fire PRA. Because Option 1 without CPT credit is an acceptable method, no additional sensitivity analysis is required.

PRA RAI 97

Attachment S, Table S-1, Item ECR50799, of the License Amendment Request (LAR), (ADAMS Accession No. ML11332A076) describes a proposed change of providing lower leakage Reactor Coolant Pump (RCP) seals and crediting them in the Fire Probabilistic Risk Assessment (FPRA). The exact RCP seal package is not specified in the LAR; however, the licensee indicated by teleconference that earlier plans to install the Westinghouse passive thermal shutdown seal (SHIELD) had been abandoned for a different RCP seal package.

As a result:

a. **Describe the type of seal package modeled in the PRA which supports the risk estimates reported in the November 15, 2011, LAR.**

b. **If a different seal package is planned to be installed to support transition to NFPA 805 from that which was used in the PRA supporting the November 15, 2011, LAR, identify the new seal package. Also, please answer the following:**

   i. **Provide the revised risk estimates of the impacts, including the basis for any revised assumptions.**
   ii. **If the new seal package model causes the total change in risk from transitioning to NFPA 805 to exceed the acceptance guidelines of RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," describe the plans to demonstrate that the risk increase is acceptable.**
   iii. **Discuss whether any currently proposed license conditions are affected by these changes.**

SCE&G Response

The seal package modeled in the PRA supporting the November 15, 2011 LAR is based on the Flowserve N9000 seals. VCSNS intends to install the Flowserve N9000 seal package.

As noted in Reference 4 LAR Attachment S Table S-1, seal replacement will be completed by the end of 2015. Reference 4 LAR Attachment S Table S-2, item 22 also requires update of the PRA to reflect the as-built modifications.