



Jeffrey B. Archie
Vice President, Nuclear Operations
803.345.4214

January 14, 2010
RC-10-0002

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
SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION FOR LICENSE AMENDMENT REQUEST - LAR-04-02911
(ALTERNATIVE SOURCE TERM)

- Reference:
1. NRC Letter (ADAMS Accession No. ML092960067) to Mr. Jeffrey B. Archie dated October 26, 2009, "Virgil C. Summer Nuclear Station, Unit 1 - Request for Additional Information (TAC NO. ME0663)"
 2. SCE&G Letter (ADAMS Accession No. ML090720887) (LAR-04-02911) from Mr. Jeffrey B. Archie to USNRC Document Control Desk dated February 17, 2009, "License Amendment and Related Technical Specification Changes to Implement Full-Scope Alternative Source Term in Accordance with 10 CFR 50.67"
 3. SCE&G Letter (RC-09-0159) from Mr. Jeffrey B. Archie to USNRC Document Control Desk dated December 23, 2009, "Response to Request for Additional Information for License Amendment Request - LAR-04-02911 (Alternative Source Term)"

South Carolina Electric & Gas Company (SCE&G) hereby submits a supplemental response to the Request for Additional Information (RAI) items identified in the referenced NRC letter (Reference 1). These RAIs resulted from NRC review of LAR-04-02911 (Reference 2) requested by SCE&G. This supplemental response demonstrates acceptable doses for each of the postulated accidents considered in the VCSNS LAR, as previously stated in Reference 3.

Attachment I provides the updated dose results. These results supersede the values discussed in the individual accident sections in Attachment 2 to Reference 2 and the summarized values in Attachment 1 to Reference 2. The enclosed CD provides the supporting PAVAN calculations.


Should you have questions, please call Bruce Thompson at (803) 931-5042.

A001
NRR

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

1/14/2010

Executed on



Jeffrey B. Archie
Vice President, Nuclear Operations

JHW/JBA/gr
Attachments I & 1 CD

- c: (without Attachments unless noted)
- K. B. Marsh
 - S. A. Byrne
 - N. S. Carns
 - J. H. Hamilton
 - R. J. White
 - W. M. Cherry
 - T. P. O'Kelley (w/ Attachments)
 - P. Ledbetter
 - L. A. Reyes (w/ Attachments)
 - R. E. Martin (w/ Attachments)
 - NRC Resident Inspector
 - K. M. Sutton
 - NSRC (w/ Attachments)
 - RTS (CR-04-02911)
 - File (813.20)
 - PRSF (RC-10-0002) (w/ Attachments)

The Question 6 response in Attachment 1 to Reference 1 (all references for this attachment are listed below on page 2) stated that new Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) doses would be provided to the NRC for each of the postulated accidents considered in the VCSNS February 17, 2009 License Amendment Request (LAR) (Reference 2). These offsite doses would be based on the latest validated three-year meteorological data set described in the responses to RAI questions 1 and 6 in Attachment 1 to Reference 1. The results and relevant discussion are provided below.

The latest three-year validated meteorological data set as described in the responses to RAI questions 1 and 6 in Attachment 1 to Reference 1 was used to generate offsite ground-level χ/Q 's for potential short term accidental releases of radioactive material to the atmosphere. Values were determined in accordance with NRC Regulatory Guide 1.145 for the 0.5% maximum sector χ/Q and the 5% direction independent value using the PAVAN computer code. The following table is a comparison of the EAB and LPZ χ/Q 's between the VCSNS February 17, 2009 LAR, the NUREG-0717 SER, and the χ/Q 's calculated with the latest three-year validated meteorological data set in Reference 3. The Reference 3 results establish the new Final Safety Analysis Report (FSAR) EAB and LPZ ground-level χ/Q 's.

Offsite, Ground-Level, EAB and LPZ χ/Q Comparison

Time Period	VCSNS LAR	NUREG-0717	Reference 3
	EAB	EAB	EAB
0 – 2 hours	4.08E-04	3.3E-04	1.24E-04
	LPZ	LPZ	LPZ
0 – 2 hours	1.01E-04	N/A	5.06E-05
0 – 8 hours	2.37E-05	4.1E-05	2.42E-05
8 - 24 hours	2.44E-06	2.6E-05	1.68E-05
1 - 4 days	1.11E-06	1.0E-05	7.55E-06
4 - 30 days	6.28E-07	2.6E-06	2.40E-06

As shown in the table above, the Reference 3 EAB χ/Q decreases compared to the VCSNS LAR. However, all but the LPZ 0 – 2 hour χ/Q 's increase with the Reference 3 results. The Reference 3 LPZ 0 – 2 hour χ/Q decreases compared to the VCSNS LAR. This χ/Q is only used in the Fuel Handling Accident (FHA). A copy of the PAVAN calculation (Reference 3) is provided in the enclosed CD.

The radiological dose calculations in Attachment 10 to Reference 2 were revised to incorporate the new offsite ground-level χ/Q 's in Reference 3. These VCSNS calculations are listed as References 4 through 9.

Accordingly, the table in Attachment 1 to Reference 2 "Summary of Design Basis Accident Radiological Consequences for AST Calculated Dose Versus RG 1.183 Dose Criteria" is updated below for the new offsite doses. These results also supersede those individual analyses described in detail in Attachment 2 to Reference 2. The previously submitted Control Room (CR) doses remain unchanged, as described in the response to Question 1 in Reference 1.

Based upon the results of these analyses, it has been demonstrated that the dose consequences are within NRC regulatory limits for alternative source term (i.e., 10 CFR 50.67 and 10 CFR 50, Appendix A, General Design Criterion 19).

References:

1. SCE&G Letter (RC-09-0159) from Mr. Jeffrey B. Archie to NRC Document Control Desk dated December 23, 2009, "Response to Request for Additional Information for License Amendment Request – LAR-04-02911 (Alternative Source Term)."
2. SCE&G Letter (ADAMS Accession No. ML090720887) (LAR-04-02911) from Mr. Jeffrey B. Archie to NRC Document Control Desk dated February 17, 2009, "License Amendment and Related Technical Specification Changes to Implement Full-Scope Alternative Source Term in Accordance with 10 CFR 50.67."
3. VCSNS Calculation DC00040-111, "Short Term Accident X/Qs", Revision 0.
4. VCSNS Calculation DC00040-097, "Loss of Coolant Accident - AST", Revision 1.
5. VCSNS Calculation DC00040-098, "Steam Generator Tube Rupture - AST", Revision 1.
6. VCSNS Calculation DC00040-099, "Main Steam Line Break - AST", Revision 1.
7. VCSNS Calculation DC00040-100, "Reactor Coolant Pump Locked Rotor - AST", Revision 1.
8. VCSNS Calculation DC00040-101, "Rod Ejection - AST", Revision 1.
9. VCSNS Calculation DC00040-102, "Fuel Handling Accidents - AST", Revision 1.

Summary of Design Basis Accident Radiological Consequences for AST Calculated Dose Versus RG 1.183 Dose Criteria			
		AST Calculated Dose (Rem TEDE)	RG 1.183 Dose Criteria (Rem TEDE)
Loss of Coolant Accident (LOCA)	CR Operator Dose	1.01	5
	EAB Dose	1.48	25
	LPZ Dose	0.83	25
Main Steam Line Break (MSLB)	Case 1: Concurrent Iodine Spike		
	CR Operator Dose	0.37	5.0
	EAB Dose	0.24	2.5
	LPZ Dose	0.20	2.5
	Case 2: Pre-existing Iodine Spike		
	CR Operator Dose	1.15	5.0
	EAB Dose	0.60	25
	LPZ Dose	0.14	25
Fuel Handling Accident (FHA)	Case 1: FHA Inside Containment		
	CR Operator Dose	0.76	5.0
	EAB Dose	1.30	6.3
	LPZ Dose	0.53	6.3
	Case 2: FHA Inside Fuel Handling Building		
	CR Operator Dose	0.41	5.0
	EAB Dose	1.30	6.3
	LPZ Dose	0.53	6.3
Steam Generator Tube Rupture (SGTR)	Case 1: Concurrent Iodine Spike		
	CR Operator Dose	0.37	5.0
	EAB Dose	0.22	2.5
	LPZ Dose	0.05	2.5
	Case 2: Pre-existing Iodine Spike		
	CR Operator Dose	1.18	5.0
	EAB Dose	0.63	25
	LPZ Dose	0.13	25
Locked Rotor Accident (LRA)	CR Operator Dose	2.43	5.0
	EAB Dose	0.67	2.5
	LPZ Dose	0.66	2.5
Control Rod Ejection Accident (CREA)	Case 1: Containment Release Path		
	CR Operator Dose	1.71	5.0
	EAB Dose	1.31	6.3
	LPZ Dose	1.46	6.3
	Case 2: Steam Generator Release Path		
	CR Operator Dose	2.38	5.0
	EAB Dose	0.77	6.3
	LPZ Dose	0.68	6.3