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Docket Nos.: 52-025  
52-026

AR-08-1729

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 20555-0001

Southern Nuclear Operating Company  
Vogtle Electric Generating Plant Units 3 and 4 Combined License Application  
Response to Request for Additional Information Letter No. 007

Ladies and Gentlemen:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC) submitted an application for combined licenses (COLs) for proposed Vogtle Electric Generating Plant (VEGP) Units 3 and 4 to the U.S. Nuclear Regulatory Commission (NRC) for two Westinghouse AP1000 reactor plants, in accordance with 10 CFR Part 52. During the NRC's detailed review of this application, the NRC identified a need for additional loss-of-coolant accident (LOCA) design basis accident information required to complete their review of the COL application's Final Safety Analysis Report (FSAR) Section 15.0, "Accident Analyses." By letter dated October 17, 2008, the NRC provided SNC with Request for Additional Information (RAI) Letter No. 007 concerning this LOCA design basis accident information need. This RAI letter contains one RAI question numbered 15.00.03-1. The enclosure to this letter provides the SNC response to this RAI.

If you have any questions regarding this letter, please contact Mr. Wes Sparkman at (205) 992-5061.

DO NOT  
NRO

Ms. M. M. Caston states she is Vice President and General Counsel of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of her knowledge and belief, the facts set forth in this letter are true.

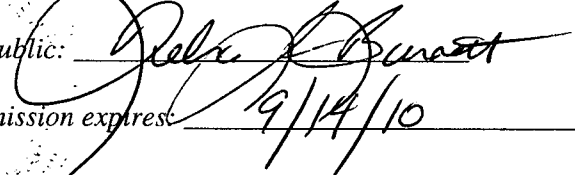
Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



Moanica M. Caston

Sworn to and subscribed before me this 14<sup>th</sup> day of November 2008

Notary Public: 

My commission expires 9/14/10

MMC/BJS/lc

Enclosure: Response to NRC RAI Letter No. 007 on the VEGP Units 3 & 4 COL Application Involving the LOCA Design Basis Accident

cc: Southern Nuclear Operating Company

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Mr. J. T. Gasser, Executive Vice President, Nuclear Operations (w/o enclosure)  
Mr. T. E. Tynan, Vice President - Vogtle (w/o enclosure)  
Mr. D. M. Lloyd, Vogtle Deployment Director  
Mr. C. R. Pierce, Vogtle Development Licensing Manager  
Mr. M. J. Ajluni, Nuclear Licensing Manager  
Mr. W. A. Sparkman, COL Project Engineer  
Document Services RTYPE: AR01.1053  
File AR.01.02.06

Nuclear Regulatory Commission

Mr. L. A. Reyes, Region II Administrator (w/o enclosure)  
Mr. M. R. Johnson, Director of Office of New Reactors (w/o enclosure)  
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Ms. S. M. Coffin, AP1000 Manager of New Reactors (w/o enclosure)  
Mr. C. J. Araguas, Lead Project Manager of New Reactors  
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Mr. S. C. Flanders, Director of Site and Environmental Reviews  
Mr. W.F. Burton, Chief – Environmental Technical Support  
Mr. M. D. Notich, Environmental Project Manager  
Mr. J. H. Fringer, III, Environmental Project Manager  
Mr. G. J. McCoy, Senior Resident Inspector of VEGP

Georgia Power Company

Mr. O. C. Harper, IV, Vice President, Resource Planning and Nuclear Development (w/o enclosure)

Oglethorpe Power Corporation

Mr. M. W. Price, Chief Operating Officer (w/o enclosure)

Municipal Electric Authority of Georgia

Mr. C. B. Manning, Jr., Senior Vice President, Participant and Corporate Affairs (w/o enclosure)

Dalton Utilities

Mr. D. Cope, President and Chief Executive Officer (w/o enclosure)

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Mr. J. S. Prebula, Project Engineer (w/o enclosure)  
Mr. R. W. Prunty, Licensing Engineer

Tetra Tech NUS, Inc.

Ms. K. K. Patterson, Project Manager

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cc: Shaw Stone & Webster, Inc.

Mr. K. B. Allison, Project Manager (w/o enclosure)

Mr. J. M. Oddo, Licensing Manager

Westinghouse Electric Company, LLC

Mr. N. C. Boyter, Vice President, AP1000 Vogtle 3 & 4 Project (w/o enclosure)

Mr. J. L. Whiteman, Principal Engineer, Licensing & Customer Interface

**Southern Nuclear Operating Company**

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**Enclosure**

**Response to NRC RAI Letter No. 007  
on the VEGP Units 3 & 4 COL Application  
Involving the LOCA Design Basis Accident**

**FSAR Section 15.0, Accident Analyses**

**eRAI Tracking No. 1260**

**NRC RAI Number 15.00.03-1:**

By letter dated August 14, 2008, NRC informed the AP1000 vendor that an assumption made in evaluating the LOCA DBA for Revision 16 of the AP1000 DCD was not technically justified. Both FSAR Chapter 15 and Section 6.4 of the subject COL application incorporate by reference the design basis accident analyses in Revision 16 of the AP1000 DCD. Provide an evaluation of the LOCA that does not make use of the rejected assumption. Describe any design or siting changes that are intended to compensate for the rejected assumption.

**SNC Response:**

Westinghouse has issued Revision 17 of the AP1000 DCD, which contained a reevaluation of the LOCA. This reevaluation does not use the rejected assumption, but does include design changes to the main control room ventilation system isolation logic. DCD Revision 17 will be incorporated by reference into the next revision of the VEGP Units 3 and 4 COLA. Chapter 15 and Section 6.4 of the VEGP Units 3 and 4 FSAR do not need to be revised as a result of these changes to the DCD, and no siting changes are necessary. However, since the short-term (accident) X/Q values used in the AP1000 DCD evaluation of the LOCA have been revised, COLA FSAR Tables 2.0-201 and 2.0-202 will be revised as follows to incorporate the revised Site Parameter values based on DCD Table 2-1.

**Proposed COLA Change:**

FSAR Table 2.0-201 will be revised as shown to cite the revised Site Parameter Values from Revision 17 of the AP1000 DCD.:

Table 2.0-201 (Sheet 6 of 7)  
 Comparison of AP1000 DCD Site Parameters and Vogtle Electric Generating Plant Units 3 & 4  
 Site Characteristics

	AP1000 DCD Site Parameter <sup>(a)</sup>	VEGP Site Characteristic	VEGP Reference	VEGP Within Site Parameter
<b>Atmospheric Dispersion Values -<math>\chi/Q</math><sup>(f)</sup></b>				
Site Boundary (annual average)	$\leq 2.0 \times 10^{-5} \text{ sec/m}^3$	$0.55 \times 10^{-5} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
Site Boundary (0-2 hr)	<del><math>\leq 1.0 \times 10^{-3}</math></del> <u><math>5.1 \times 10^{-4}</math></u> $\text{sec/ m}^3$ <sup>(g)</sup>	$3.49 \times 10^{-4} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
Low population zone boundary <sup>(g)</sup>				
0–8 hr	<del><math>\leq 5.0 \times 10^{-4}</math></del> <u><math>2.2 \times 10^{-4}</math></u> $\text{sec/ m}^3$	$7.04 \times 10^{-5} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
8–24 hr	<del><math>\leq 3.0 \times 10^{-4}</math></del> <u><math>1.6 \times 10^{-4}</math></u> $\text{sec/ m}^3$	$5.25 \times 10^{-5} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
24–96 hr	<del><math>\leq 1.5 \times 10^{-4}</math></del> <u><math>1.0 \times 10^{-4}</math></u> $\text{sec/ m}^3$	$2.77 \times 10^{-5} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
96–720 hr	$\leq 8.0 \times 10^{-5} \text{ sec/ m}^3$	$1.11 \times 10^{-5} \text{ sec/ m}^3$	ESPA SSAR Table 1-1	Yes
Control Room	Table 2.0-202	Table 2.0-202	Table 2.0-202	Yes

(a) AP1000 DCD Site Parameters are a compilation of DCD Tier 1 Table 5.0-1 and DCD Tier 2 Table 2-1.

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(f) For AP1000, the term “site boundary” and “exclusion area boundary” are used interchangeably. Thus, the  $\chi/Q$  specified for the site boundary applies whenever a discussion refers to the exclusion area boundary. At VEGP the “site boundary” and “exclusion area boundary” are not interchangeable. See Figure 1.1-202.

(g) Site Interface Values for Post-Accident Dose Consequences and Minimum Distance to Site Boundary are reported per ESPA SSAR Section 1.3 and Table 1-1. Cooling Tower Make-up Flow Rate, which is not an AP1000 DCD Site Parameter, is 61,145 gpm (2 units) per ESPA SSAR Table 1-1.

FSAR Table 2.0-202 will be revised as shown to cite the revised Site Parameter Values from Revision 17 of the AP1000 DCD.:

Table 2.0-202  
 Comparison of Control Room Atmospheric Dispersion Factors for Accident Analysis for AP1000 DCD  
 and  
 VEGP Units 3 & 4 (Sheet 1 of 2)

**X/Q (sec/m3) at HVAC Intake for the Identified Release Points<sup>(a)</sup>**

Release Time	Plant Vent	PCS Air Diffuser	Ground Level Containment Release Points <sup>(c,d)</sup>	Ground Level Containment Release Points	PORV and Safety Valve Releases <sup>(d)</sup>	PORV and Safety Valve Releases	Condenser Air Removal Stack <sup>(d)</sup>	Condenser Air Removal Stack	Steam Line Break Releases	Steam Vent	Fuel Handling Area <sup>(d)</sup>	Fuel Handling Area Blowout Panel	Fuel Handling Area Truck Bay Door	
	DCD	VEGP	VEGP	DCD	VEGP	DCD	VEGP	DCD	VEGP	DCD	VEGP	DCD	VEGP	VEGP
0 – 2 hours	3.0E-3	2.02E-03	1.68E-03	6.0E-3	3.20E-03	2.0E-2	1.31E-02	6.0E-3	1.54E-03	2.4E-2	1.48E-02	6.0E-3	1.54E-03	1.15E-03
2 – 8 hours	2.5E-3	1.58E-03	1.29E-03	<del>4.5E-3</del> 3.6E-3	1.82E-03	1.8E-2	1.02E-02	4.0E-3	1.17E-03	2.0E-2	1.20E-02	4.0E-3	1.11E-03	8.29E-04
8 – 24 hours	1.0E-3	6.37E-04	5.47E-04	<del>2.0E-3</del> 1.4E-3	8.27E-04	7.0E-3	4.62E-03	2.0E-3	5.36E-04	7.5E-3	5.41E-03	2.0E-3	4.42E-04	3.35E-04
1 – 4 days	8.0E-4	5.12E-04	4.55E-04	1.8E-3	7.22E-04	5.0E-3	3.29E-03	1.5E-3	3.94E-04	5.5E-3	3.93E-03	1.5E-3	3.57E-04	2.62E-04
4 – 30 days	6.0E-4	3.82E-04	3.34E-04	1.5E-3	5.70E-04	4.5E-3	2.77E-03	1.0E-3	2.78E-04	5.0E-3	3.26E-03	1.0E-3	2.59E-04	1.86E-04

- a. These dispersion factors are to be used 1) for the time period preceding the isolation of the main control room and actuation of the emergency habitability system, 2) for the time after 72 hours when the compressed air supply in the emergency habitability system would be exhausted and outside air would be drawn into the main control room, and 3) for the determination of control room doses when the non-safety ventilation system is assumed to remain operable such that the emergency habitability system is not actuated.
- b. These dispersion factors are used for analysis of the doses due to a postulated small line break outside of containment. The plant vent and PCS air diffuser are potential release paths for other postulated events (loss-of-coolant accident, rod ejection accident, and fuel handling accident inside the containment); however, the values are bounded by the dispersion factors for ground level releases.
- c. The listed values represent modeling the containment shell as a diffuse area source, and are used for evaluating the doses in the main control room for a loss-of coolant accident, for the containment leakage of activity following a rod ejection accident, and for a fuel handling accident occurring inside the containment.
- d. The listed values bound the dispersion factors for releases from the steam line safety & power-operated relief valves. These dispersion factors would be used for evaluating the doses in the main control room for a steam generator tube rupture, a main steam line break, a locked reactor coolant pump rotor, and for the secondary side release from a rod ejection accident.



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- e. The listed values bound the dispersion factors for releases from the fuel storage and handling area. The listed values also bound the dispersion factors for releases from the fuel storage area in the event that spent fuel boiling occurs and the fuel handling area relief panel opens on high temperature. These dispersion factors are used for the fuel handling accident occurring outside containment and for evaluating the impact of releases associated with spent fuel pool boiling.
- f. These dispersion factors are to be used when the emergency habitability system is in operation and the only path for outside air to enter the main control room is that due to ingress/egress.
- g. This release point is included for information only as a potential activity release point. None of the design basis accident radiological consequences analyses model release from this point.
- h. The LOCA dose analysis models the ground level containment release point HVAC intake atmospheric dispersion factors. Other analyses model more conservative values.