

**L. M. Stinson (Mike)**  
Vice President  
Fleet Operations Support

**Southern Nuclear  
Operating Company, Inc.**  
40 Inverness Center Parkway  
Post Office Box 1295  
Birmingham, Alabama 35201

Tel 205.992.5181  
Fax 205.992.0341



*Energy to Serve Your World<sup>SM</sup>*

October 9, 2007

Docket Nos.: 50-424  
50-425

NL-07-1948

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

Vogtle Electric Generating Plant  
Additional Information to Support Acceptance Review of  
Request to Change Maximum Power Level

Ladies and Gentlemen:

By way of letter NL-07-1020, dated August 28, 2007, Southern Nuclear Operating Company (SNC) submitted an application to change the Maximum Power Level of Vogtle Electric Generating Plant (VEGP) Units 1 and 2. On October 2, 2007, in a phone call between SNC and the Staff, SNC was requested to provide additional information to support the acceptance review of the radiological analyses described in the application.

As requested by the Staff, SNC is providing the following information regarding the calculation of relative atmospheric dispersion factor ( $\chi/Q$ ) values at the Main Control Room air intakes following a loss-of-coolant accident.

1. The annual periods for the meteorological data are 1998, 1999, and 2000.
2. Meteorological data used in the ARCON96 analyses are located on the enclosed CD (Enclosure 1) in the folder named "Met Data."
3. The ARCON96 input data are located on the enclosed CD in the folder named "Input Files." This folder also contains a file named "ARCON\_Input\_Output\_Fname.xls" that cross-references the names of the input and output files with the individual ARCON96 cases.
4. For VEGP, the release mode is "ground level" as described in VEGP UFSAR Section 15A.1.
5. The source-receptor configuration details are provided in Enclosure 2. The information is excerpted from the SNC calculation for determining the  $\chi/Q$  values at the Main Control Room air intakes.

A001

NRR

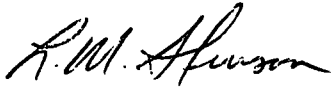
6. Exclusion Area Boundary (EAB) and Low Population Zone (LPZ) distances are not being provided because offsite  $\chi/Q$  values were not recalculated.
7. The ARCON96 output data are located on the enclosed CD in the folder named "Output Files."
8. The current  $\chi/Q$  values are reported in Table 15A-2 of the VEGP UFSAR. The current and revised  $\chi/Q$  values are also reported in Table III-2 in Enclosure 5, Section III, of the application to change the Maximum Power Level of VEGP Units 1 and 2 referenced above.

Mr. L. M. Stinson states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

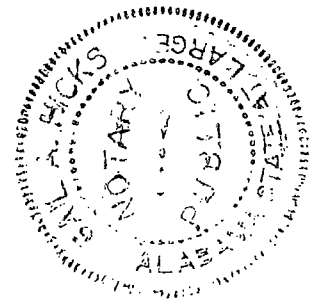
This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,


SOUTHERN NUCLEAR OPERATING COMPANY



L. M. Stinson  
Vice President Fleet Operations Support



Sworn to and subscribed before me this 9<sup>th</sup> day of October, 2007.

  
Notary Public

My commission expires: July 5, 2010

LMS/RJF/daj

Enclosures: 1. CD Containing ARCON96 Files  
2. Source-Receptor Configuration Details

U. S. Nuclear Regulatory Commission

NL-07-1948

Page 3

cc: Southern Nuclear Operating Company  
Mr. J. T. Gasser, Executive Vice President  
Mr. T. E. Tynan, Vice President – Vogtle  
Mr. D. H. Jones, Vice President – Engineering  
RType: CVC7000

U. S. Nuclear Regulatory Commission  
Dr. W. D. Travers, Regional Administrator  
Mr. S. P. Lingam, NRR Project Manager – Vogtle  
Mr. G. J. McCoy, Senior Resident Inspector – Vogtle

State of Georgia  
Mr. N. Holcomb, Commissioner – Department of Natural Resources

**Vogtle Electric Generating Plant  
Additional Information to Support Acceptance Review of  
Request to Change Maximum Power Level**

**Enclosure 1**

**CD Containing ARCON96 Files**

**Vogtle Electric Generating Plant  
Additional Information to Support Acceptance Review of  
Request to Change Maximum Power Level**

**Enclosure 2**

**Source-Receptor Configuration Details**

Project Vogtle Units 1 and 2	Calculation Number X6CHA.01.00
Subject/Title Main Control Room and Technical Support Center Air Intake X/Q Estimates	Sheet [6] of [10]

Distance between FHB and CR air intake

FHBs are located between two reactor buildings with a roof elevation of 288’2”. The FHB releases were assumed to occur at the roof, where the distance to the CR air intake is the shortest. This shortest distance is same to Units 1 and 2 air intakes when the release locations are located at the east and west corner of the FHB.

$$\text{Total source-to-receptor distance} = 8085.25 \text{ ft} - 7998.5 \text{ ft} + 19.25 \text{ ft} = 106 \text{ ft} = 32.3 \text{ m}$$

Where 19.25 ft is the distance between Row CD and the CR intake, and 8085.25 ft and 7998.5 ft are the locations of Rows CD and FA, respectively (Drwg. 1X4DE312, Ver. 11.0). The vertical distance between the FHB roof and the CR intake is:

$$\text{FHB roof height} - \text{CR air intake height} = 288.17' - 283' = 5.17 \text{ ft}$$

The distance between Unit 1 CR intake and Unit 1 FHB release point is shorter than the distance between Unit 1 CR intake and Unit 2 FHB release point. Similarly, the distance between Unit 2 CR intake and Unit 2 FHB release point is shorter than that between Unit 2 CR intake and Unit 1 FHB release point. Only the expected worst case distances were presented regarding the FHB releases. It is the case involving Unit 1 CR intake and the east corner FHB release. The case involving Unit 2 CR intake and west corner FHB releases will produce results that are identical to the case with Unit 1. All the above source-to-receptor distances were used in the ARCON96 runs. Distances between the release points and air intakes are presented below.

Receptor: Unit 1 CR Air Intake					
Release Point	Horizontal Distance (ft)	Vertical Distance (ft)	Straight-Line Distance		Direction to Source (degree)
			Ft	m	
<b>Unit 1</b>					
Containment	72	0	72.0	21.9	135
Hatch Door	275	-54.5	280.3	85.5	135
FHB	106	5.17	106.1	32.3	180
<b>Unit 2</b>					
Containment	189	0	189.0	57.6	247
Hatch door	363	-54.5	367.1	111.9	243

Receptor: Unit 2 CR Air Intake					
Release Point	Horizontal Distance (ft)	Vertical Distance (ft)	Straight-Line Distance		Direction to Source (degree)
			ft	m	
<b>Unit 1</b>					
Containment	189	0	189.0	57.6	73
Hatch Door	363	-54.5	367.1	111.9	118
<b>Unit 2</b>					
Containment	72	0	72.0	21.9	226
Hatch door	275	-54.5	280.3	85.5	225
FHB	106	5.17	106.1	32.3	180

Project Vogtle Units 1 and 2	Calculation Number X6CHA.01.00
Subject/Title Main Control Room and Technical Support Center Air Intake X/Q Estimates	Sheet [7] of [10]

Receptor: TSC Air Intake					
Release Point	Horizontal Distance (ft)	Vertical Distance (ft)	Straight-Line Distance		Direction to Source (degree)
			ft	m	
<b>Unit 1</b>					
Containment	81	0	81.0	24.7	173
Hatch Door	240	-5.75	240.1	73.2	161
<b>Unit 2</b>					
Containment	283	0	283.0	86.3	246
Hatch door	455	-5.75	455.0	138.7	243

The elevations of air intakes and release points are presented in the following table.

Location	Elevation (ft)
CR Intake	283
TSC Intake	234.25
Hatch Door	228.5
FHB Roof	288.17

Note: The grade elevation is 220 ft.

It should be noted that for the postulated FHB releases, besides the cases presented above, four other scenarios were also analyzed. They are 1) east corner release – Unit 2 CR intake; 2) west corner release – Unit 1 CR intake; 3) mid-point release – Unit 1 CR intake; and 4) mid-point release – Unit 2 CR intake. The mid-point is assumed to be located in the middle of the line connecting east and west corner release points. The above 4 scenarios all have their “intake to source” distances larger than that of the east corner release and Unit 1 CR intake (or west corner release and Unit 2 CR intake). They were considered to ensure that the meteorological conditions associated with the specific wind direction window would not cause the X/Qs to become greater than the cases presented in this calculation.

#### 5.4 Effective Wind Directions

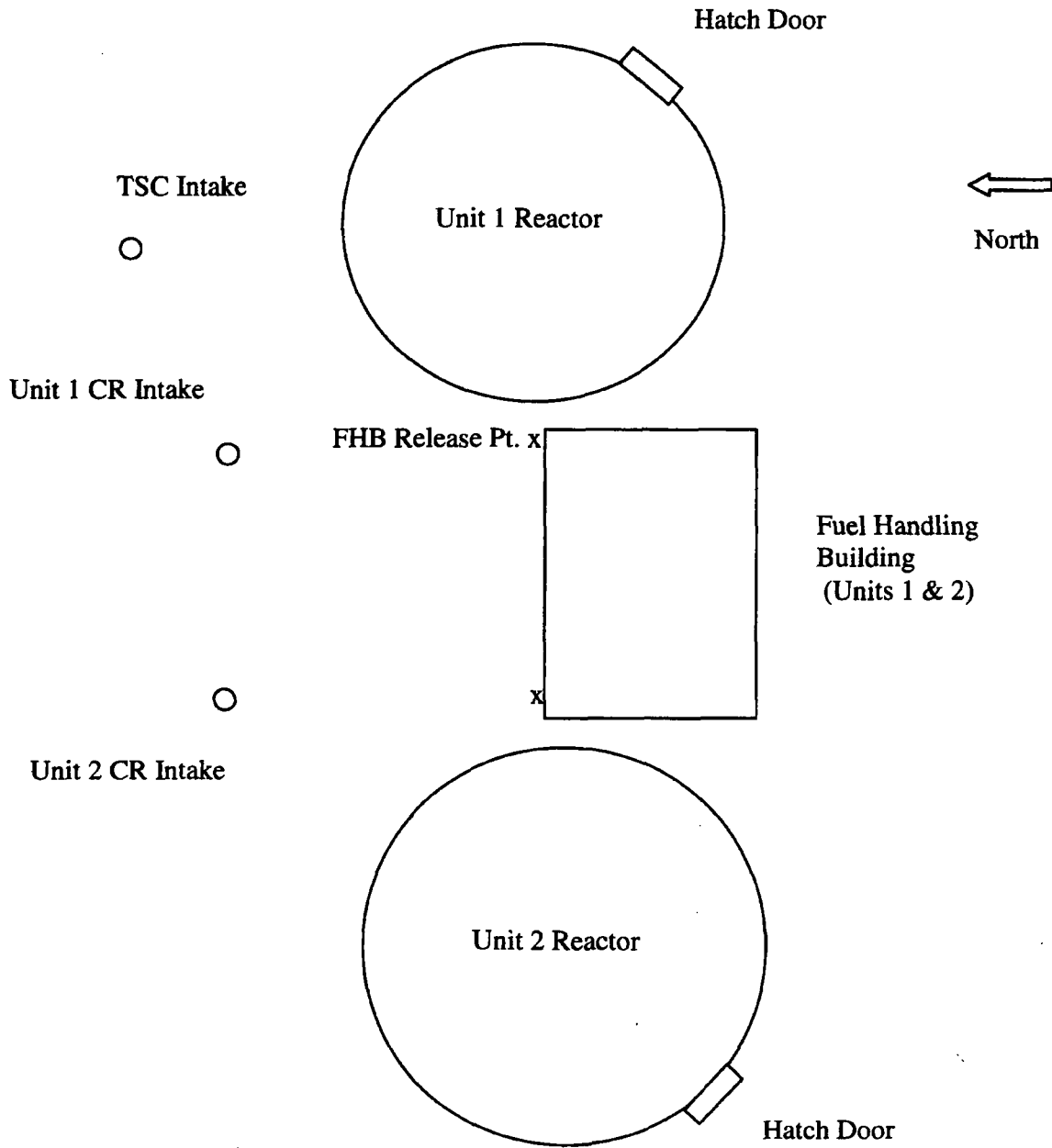
The direction to the source from the intake and “wind direction window width” are part of the input requirements for the ARCON96 program. As suggested in NUREG/CR-6331 (1997), the wind direction window sector size was chosen as the direction from the receptor to the source,  $\pm 45^\circ$ . The “direction to source” for each combination of release point and receptor (air intake) is presented in the table shown in Sheets 5 and 6.

#### 5.5 Building Areas

Building areas used for wake analysis were calculated based on the assumptions described in Section 4.3.

Project Vogtle Units 1 and 2	Calculation Number X6CHA.01.00
Subject/Title Main Control Room and Technical Support Center Air Intake X/Q Estimates	Sheet [10] of [10]

**Figure 1 Air Intake Locations and Release Points**



Note: Release point from the reactor was a point on the containment surface closest to the receptor location.