



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

December 22, 2008

The Honorable Dale E. Klein  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT: FINAL REVIEW OF THE VOGTLE ELECTRIC GENERATING PLANT EARLY SITE PERMIT APPLICATION AND LIMITED WORK AUTHORIZATION REQUEST AND THE ASSOCIATED SAFETY EVALUATION REPORT**

Dear Chairman Klein:

During the 558<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards, December 4-6, 2008, we completed our review of the Vogtle early site permit application submitted by the Southern Nuclear Operating Company (Southern Nuclear or "applicant") and the associated Safety Evaluation Report (SER) prepared by the NRC staff. An interim report on our review of this early site permit application was issued November 20, 2007. We also completed review of the applicant's limited work authorization request for initiating work on the proposed site. Our Subcommittee on Early Site Permits reviewed these matters at its meeting on December 3, 2008. During our reviews, we had the benefit of discussions with representatives of the NRC staff and Southern Nuclear Operating Company. We also had the benefit of the documents referenced.

### **CONCLUSIONS AND RECOMMENDATION**

1. The early site permit and the limited work authorization should be granted.
2. The predicted ground motion response spectrum for the proposed site is not bounded by the certified seismic design response spectrum for the AP1000 reactor. This will have to be addressed in any combined license application for reactors at the proposed site.
3. The requested limited work authorization delineates activities that can be undertaken without degrading the safety of the AP1000 reactors proposed for installation at the site.

### **DISCUSSION**

The Southern Nuclear Operating Company has applied for an early site permit for a location adjacent to the sites of the operating reactors, Vogtle Units 1 and 2. The application is unusual in that it references the certified design for the AP1000 reactor rather than plant parameter envelopes, as has been done by other early site permit applications. Also, the application provides a complete and integrated emergency plan rather than specifying just the major features of such a plan, as has been done in previous early site permit applications.

The permit application, as amended in response to review by the NRC staff, adequately characterizes the proposed site. Seismicity is the most important site safety issue. Seismicity at the proposed site is dominated by the Charleston seismic zone. Together, the work by the applicant as well as the review and critique of this work by the NRC staff have advanced the understanding of the Charleston seismic zone and the potential ground motion at the proposed site.

The predicted ground motion response spectrum at the proposed site is not bounded by the certified seismic design response spectrum for the AP1000 reactor. The design spectrum is exceeded in frequency ranges below one Hertz and above about seven Hertz. These differences between the predicted spectrum and the design spectrum will have to be addressed in any combined license application for reactors at the proposed site.

Surface soils in the east coast piedmont at the proposed site are susceptible to liquefaction in seismic events of sufficient intensity. The applicant plans to excavate the surface soils to a depth of about ninety feet and replace it with an engineering backfill much as was done for Vogtle Units 1 and 2. To expedite this significant engineering undertaking, the applicant has applied for a limited work authorization. Staff review has verified that the engineered backfill, waterproof membrane, and mechanically stabilized earthen walls proposed by the applicant can be safely installed and will yield a site where seismic events will not cause foundations of the AP1000 reactors to slide or overturn.

The complete and integrated emergency plan proposed by the applicant has been found to be adequate. It has been necessary to specify permit conditions on emergency action levels that cannot be completely specified until details of plant design come available. A permit condition has been imposed concerning the applicant's proposal to locate a technical support center for reactors at the proposed site differently than is specified in the AP1000 design.

The applications for the early site permit and the limited work authorization and the reviews of these applications by the NRC staff are adequate. The early site permit and the limited work authorization should be granted.

Dr. Said Abdel-Khalik did not participate in the Committee's deliberations regarding this matter.

Sincerely,

*/RA/*

William J. Shack  
Chairman

References:

1. U.S. Nuclear Regulatory Commission, "Safety Evaluation of the Early Site Permit Application in the Matter of Southern Nuclear Operating Company, for the Vogtle Early Site Permit Site," November 2008 (ML080290280)

2. Letter from Joseph A. Miller, Senior Vice President, Southern Nuclear Operating Company, to U.S. Nuclear Regulatory Commission, "Vogtle Electric Generating Plant Early Site Permit Application (Project No. 737)," dated August 14, 2006 (ML062290246)
3. Letter from Joseph A. Miller, Senior Vice President, Southern Nuclear Operating Company, to U.S. Nuclear Regulatory Commission, "Vogtle Plant Early Site Permit Application, Supplement to Include Limited Work Authorization Activities," dated August 16, 2007 (ML072430208)
4. U.S. Nuclear Regulatory Commission, Safety Evaluation with Open Items, "Safety Evaluation Report for the Vogtle Early Site Permit Application," August 2007 (ML071581032)
5. Letter from William J. Shack, Chairman, Advisory Committee on Reactor Safeguards, to Luis A. Reyes, Executive Director for Operations, "Interim Letter Southern Nuclear Operating Company Application for the Vogtle Early Site Permit and the Associated NRC Safety Evaluation Report with Open Items," dated November 20, 2007 (ML073070005)

2. Letter from Joseph A. Miller, Senior Vice President, Southern Nuclear Operating Company, to U.S. Nuclear Regulatory Commission, "Vogtle Electric Generating Plant Early Site Permit Application (Project No. 737)," dated August 14, 2006 (ML062290246)
3. Letter from Joseph A. Miller, Senior Vice President, Southern Nuclear Operating Company, to U.S. Nuclear Regulatory Commission, "Vogtle Plant Early Site Permit Application, Supplement to Include Limited Work Authorization Activities," dated August 16, 2007 (ML072430208).
4. U.S. Nuclear Regulatory Commission, Safety Evaluation with Open Items, "Safety Evaluation Report for the Vogtle Early Site Permit Application," August 2007 (ML071581032)
5. Letter from William J. Shack, Chairman, Advisory Committee on Reactor Safeguards, to Luis A. Reyes, Executive Director for Operations, "Interim Letter Southern Nuclear Operating Company Application for the Vogtle Early Site Permit and the Associated NRC Safety Evaluation Report with Open Items," dated November 20, 2007 (ML073070005)

Distribution:

CSantos	ADias	DBessette
HNourbakhsh	GShukla	MBanerjee
PWen	ZAbdullahi	SDuraiswamy
HVandermolen	CLBrown	DWidmeyer
MLee	JFlack	VBrown
JDelgado	NColeman	CJaegers
TBloomer	BChamp	Abates
SMcKelvin	LMike	RidsSECYMailCenter
RidsEDOMailCenter	RidsNMSSOD	RidsNSIROD
RidsFSMEOD	RidsRESOD	RidsOIGMailCenter
RidsOGCMailCenter	RidsOCAMailCenter	RidsOCAAMailCenter
RidsNRROD	RidsNROOD	

**Accession No:** ML083440021 **Publicly Available (Y/N):** Yes **Sensitive (Y/N):** No

**Viewing Rights:**  NRC Users or  ACRS only or  See restricted distribution

OFFICE	ACRS	SUNSI Review	ACRS	ACRS	ACRS
<b>NAME</b>	D. Widmayer	D. Widmayer	A. Dias/C. Santos	E. Hackett	EMH for WJS
<b>DATE</b>	12/17/08	12/17/08	12/18/08	12/22/08	12/22/08

**OFFICIAL RECORD COPY**