

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD PANEL

Before the Licensing Board:

G. Paul Bollwerk, III, Chairman
Nicholas G. Trikouros
Dr. James F. Jackson

In the Matter of

SOUTHERN NUCLEAR OPERATING CO.

(Early Site Permit for Vogtle ESP Site)

Docket No. 52-011-ESP

ASLBP No. 07-850-01-ESP-BD01

December 5, 2008

MEMORANDUM AND ORDER

(Providing Initial Questions and Potential Presentation Topics
Associated with Mandatory Hearing on Safety Matters)

As a adjunct to the Licensing Board's October 17, 2008 memorandum and order regarding the environmental aspects of the mandatory hearing for this proceeding, see Licensing Board Memorandum and Order (Providing Initial Questions and Potential Presentation Topics Associated with Mandatory Hearing on Environmental Matters) (Oct. 17, 2008) (unpublished) [hereinafter Environmental Order], what follows provides (1) initial questions that the Licensing Board requests be answered in connection with its mandatory hearing-related review of safety matters; and (2) topics for presentations during the mandatory portion of the mandatory hearing for this proceeding.¹

¹ Although Joint Intervenors, which include the Center for a Sustainable Coast, Savannah Riverkeeper, Southern Alliance for Clean Energy, Atlanta Women's Action for New Directions, and Blue Ridge Environmental Defense League, are not parties to the mandatory hearing, as a courtesy they are being served with this issuance.

A. Questions Regarding Safety Matters

The Board's questions are set out in Appendix A to this issuance. As the author of the November 2008 advanced safety evaluation report (ASER) relating to the Vogtle early site permit (ESP) application that is the basis for these inquiries, the NRC staff likely is the principal respondent. Nonetheless, applicant Southern Nuclear Operating Company (SNC) may file responses to these questions as well. Any responses should be filed on or before Monday, January 5, 2009.

Based on further Board review of the ASER (or the final SER (FSER) when it is issued) and the answers to the questions posed in Appendix A, the Board may have additional questions regarding the safety portion of the mandatory hearing for this proceeding.

B. Mandatory Hearing Presentation Topics Regarding Safety Matters

Below are safety-related subject matter areas for which the Board currently is contemplating entertaining presentations by staff and SNC witnesses during the mandatory hearing. These topics may be revised or additional topics added in response to further Board review of the ASER (or the FSER when it is issued) and the answers to the questions posed in Appendix A. The Board will also explore with the staff and SNC at a future prehearing conference how best to organize the mandatory hearing to reduce overlapping and redundant presentations.

1. Seismic Evaluation

Provide a presentation reviewing the Vogtle Electric Generating Plant (VEGP) site seismic evaluation, the safe-shutdown earthquake, the site's geological characteristics important to its seismic response, and the basis for the staff's conclusions that the VEGP site is seismically suitable for four nuclear units. This presentation also should include a discussion of the seismic issues that were the genesis of the delay in issuance of the FSER. [Note: This

question, which is substituted for question 4 in the Board's October 17 memorandum and order, see Environmental Order at 3, should be addressed from both a safety and an environmental perspective.]

2. Accidental Release and Transport of Radioactive Liquid Effluents

Provide a presentation that reviews the analysis of the release and transport of radioactive liquid effluents under postulated accident conditions. This should include the relevant site hydrology, effluent release points, transport paths, and a discussion of site characteristics that impact transport. It should also include a discussion of how the parameters used in the evaluation are related to on-site measurements, and how the staff assured itself that the results were conservative. [Note: SNC and the staff should advise the Board in their responses to the Board questions whether they believe this topic can be combined with topic 2 set forth the Board's October 17 memorandum and order, see Environmental Order at 2-3.]

3. Groundwater Impacts on Safety-related Structures

Provide a presentation that reviews the potential groundwater impacts on the subsurface portion of safety-related structures, systems, and components (SSCs). Include a presentation of the relevant post-construction site hydrology, how evaluation parameters relate to on-site measurements, and how the staff assured itself that the evaluation in the SER is conservative.

4. Site Emergency Plan

Provide a presentation that reviews the key elements of the Site Emergency Plan. This should include a discussion regarding how the control rooms of each of the four units onsite will interact with the proposed common technical support center (TSC) and with each other under emergency conditions.

5. Deferrals to/Action Items for COL

Provide a presentation that identifies and reviews the reasons why any subject matter areas in the SER have been deferred to, or listed as action items for, the COL stage. [Note: This presentation can be combined with any presentation regarding topic 6 in the Board's October 17 memorandum and order, see Environmental Order at 4.]

6. Permit Conditions

Provide a presentation that identifies and reviews the reasons for any proposed permit conditions.

It is so ORDERED.

FOR THE ATOMIC SAFETY
AND LICENSING BOARD²

/RA/

G. Paul Bollwerk, III
CHAIRMAN

Rockville, Maryland

December 5, 2008

² Copies of this memorandum and order were sent this date by the agency's E-Filing system to counsel for (1) applicant SNC; (2) Joint Intervenors; and (3) the staff.

APPENDIX A

Licensing Board Questions Associated with Safety Portion
of Vogtle Early Site Permit Mandatory Hearing

Question No.	ASER Section(s)	ASER Page(s)	Inquiry:
1	2.1.2.1 2.1.2.3	2-4 2-6	What measures will be in place, other than posting No Trespassing signs, to monitor and control access into the Exclusion Area?
2	2.2.1.3 2.2.2.3	2-15 2-22	Will there be any ongoing monitoring to ensure that the level of hazard from barge, rail, and highway shipments does not increase in the future?
3	2.3.1.3.1, Table 2.3.1-1	2-28 2-29 2-43	Why was the meteorological data recorded by the existing Vogtle plant meteorological tower not used as a data source?
4	2.3.1.3.4	2-36	The ASER states that "[t]he applicant stated that the [passive cooling system (PCS)] is not significantly influenced by local weather conditions." This statement does not appear to be independently verified in the ASER. Is there a reference to the AP1000 design certification document (DCD), SER, or some other document that would provide independent verification of this conclusion?
5	2.3.1.3.5	2-36 to 2-39	Site Safety Analysis Report (SSAR) Table 1-1 (at 1-12 to 1-13) provides data for the maximum dry bulb (DB), minimum DB, maximum wet bulb (WB), and site temperature basis for the AP1000. Why are the AP1000 limits below the limits specified for the site? What are the implications of this? If there is a coincidence limit (i.e., maximum DB and coincident WB) required for the AP1000, why is this not specified for the site as well in Table 1-1?
6	2.3.1.3.5	2-38 2-39	What is the relationship between the AP1000-specific and the site-specific temperature characteristics? What is the limiting factor in determining the AP1000-specific temperature and humidity limits, if it is not the ultimate heat sink (UHS) performance?
7	2.3.4.3.1	2-68	The staff states relative to atmospheric dispersion estimates that it used the PAVAN input model provided by SNC. Did the staff perform an independent review of the entire input deck before using it, or did it review only the key assumptions discussed in the ASER?

Question No.	ASER Section(s)	ASER Page(s)	Inquiry:
8	2.3.5.3.4, Table 2.3.5-2	2-79, 2-80	Is the staff comfortable with the comparative differences between the current analysis results and the Vogtle Units 1 & 2 results? Please explain why or why not?
9	2.4.2.4	2-92	What is the significance of differentiating between "flooding causal mechanisms" and "the controlling flooding mechanism"? Also, for the purpose of the flooding evaluation, how is "in the vicinity of the site and site regions" defined?
10	2.4.2.4	2-92	Expand on how historical data were used to determine the key hydrological parameters such as the Probable Maximum Flood, Design Basis Flood, and flooding causal and controlling mechanisms. Review the basis for judging that the added margins were sufficient to account for the uncertainty of the historical record of measurements.
11	2.4.7.3.2	2-131	What is the basis for using 18° F as a baseline figure in the evaluation of the freezing hazard?
12	2.4.13.3.2	2-172	Is there evidence of chelating agents actually being present at the VEGP site? If not, what is the basis for the staff's conclusion that the possibility of their presence should be considered in evaluating contaminant transport?
13	3.5.1.6.3	3-2 3-3	The aircraft hazard associated with the Augusta Airport was based on the number of operations projected through 2025. Why wasn't a projection used that runs through the expected life of the new Vogtle units?
14	11.3.2	11-5	As referenced by the staff, in Table 11.2-1 of the SSAR (at 11.2-3), (a) what is the basis for using 0.1 hour as the transit time for the maximally exposed individual (MEI); (b) why is the 16-hour transit time for the average population reasonable; and (c) are the population numbers conservatively projected?
15	11.3.2	11-5	As referenced by the ASER, in Table 11.2-3 of the SSAR (at 11.2-5) why are the radioactive Iodine and Cesium isotope releases (and consequently the collective doses) so much higher for Units 3 and 4, as opposed to Units 1 and 2?

Question No.	ASER Section(s)	ASER Page(s)	Inquiry:
16	11.3.2	11-6	Are the river flow rates used in the liquid pathway analysis, Table 11.3-1, still reasonable lower bounds in light of recent drought conditions in the area?
17	13.3	General	Other than having a protected area boundary that surrounds all four reactor units, and full emergency response organization paging to handle multi-site accidents, is the staff treating each reactor on the site as an independent entity with respect to radiation releases and emergency response, or has the staff considered any other multiple unit emergency planning issues/responses relative to this four-unit site?
18	13.3.1.2	13-5	The staff makes reference in the second paragraph on page 13-5 to an April 2006 evacuation time estimate (ETE) included as Enclosure 10 to the SNC application. Is this the same as the ETE report by Innovative Emergency Management (IEM), which is referenced in SSAR section 13.3.4 (at 13.3-4)? If not, please explain the difference between the April 2006 report and the IEM report and indicate whether the staff has reviewed the IEM report and what conclusions it reached based on that review. Also, please provide a reference that would allow the Board to access the IEM ETE report.
19	13.3.3.2.4	General	ITAAC 1.1 for both units states that "the parameters specified in Table Annex V2H-1, Post Accident Monitoring Variables, are retrievable in the control room, TSC and [emergency operations facility (EOF)]." Will each control room have displays that provide data for all four units, or is the data in a given control room limited to that particular unit?
20	13.3.3.2.4	General	How, and by whom, is the decision for event downgrading or termination made?
21	13.3.3.2.6	13-47 [F.1.a-e]	What is the formal communication between the unaffected control rooms and the emergency response locations, including the affected control room, during an emergency? Does this include a dedicated data line and, if not, why not?
22	13.3.3.2.6	13-47 [F.1.f]	This paragraph states that "the emergency response data system (ERDS), will allow for transmission of plant parameter information to the NRC." Is there a similar connection among all of the units on the site?

Question No.	ASER Section(s)	ASER Page(s)	Inquiry:
23	13.3.3.2.6	General	Cell phones are not mentioned as a backup communication source or as a continuous communication source onsite. Cell phones were not prevalent when NUREG-0654 was developed. Should cell phones be included in the Emergency Plan (EP)?
24	13.3.3.2.8	13-59	It is the Board's understanding that the Vogtle site TSC is not near any of the control rooms, and is reached by walking outside of an enclosed structure. NUREG-0696, section 2.2 stresses the face-to-face communication requirement between the TSC and the control room. The proposed TSC location seemingly makes face-to-face communication problematic, especially during periods of severe weather. Why is the important decision regarding TSC location being put off until the COL stage in the form of a permit condition (Permit Condition No. 8)?
25	13.3.3.2.8	13-60	The ASER states in the last sentence on the page that "[t]he TSC structure and ventilation system will be designed to ensure that the TSC personnel are protected from radiological hazards." What about non-radiological hazards?
26	13.3.3.2.8	13-61	The last sentence in the paragraph at the top of the page indicates that "[p]ortable radiation monitors will be available for personnel in transit from the TSC to other areas, and portable air breathing apparatus and anticontamination clothing will also be provided in the TSC." What about people initially traveling from the control room to the TSC? What about those having to make such trips in severe weather conditions?
27	13.3.3.2.9	13-69	As referenced by the ASER, EP section 1 (at 1-2) discusses the use of the MIDRAC code (a version of the MIDAS code) to calculate the downwind dispersion of radioactive releases. How are releases from more than one unit, separated in time and magnitude, considered? Does the MIDRAC code have this capability?

Question No.	ASER Section(s)	ASER Page(s)	Inquiry:
28	13.3.3.2.9	13-70 [1.8]	The ASER states that "[w]hen precipitation is predicted or occurring in the area of the plume, the potential for significantly increased rates of radioactivity deposition will be considered by increasing the scope of environmental sampling, as required to quantify the effects of this potentially increased deposition." Please provide a fuller explanation of how the effects of precipitation will be measured, incorporated into the analyses, and considered in the emergency response decision making. In this regard, the current Vogtle offsite dose calculation manual does not appear to account for the effects of precipitation.
29	Section 13	General	Some positions in the EOF are designated as being site-specific. Since the VEGP site will have different reactor types at the same site, will the Emergency Plan Implementing Procedures for VEGP be modified to address this?
30	15.0.3.1	15-1	The calculated design basis accident (DBA) doses were scaled from results in the AP-1000 DCD. Do the results come from a version of the DCD that has received final certification from the NRC?
31	15.0.3.1	15-1	As referenced in the ASER, in SSAR Table 15-2 (at 15-5), is it assumed that the isotopes are release at a constant rate over the specified time periods? If yes, is this assumption always conservative?
32	15.0.3.4 2.3.4.4	15-5 2-71	The staff concludes there is reasonable assurance that the radiological consequences of DBAs will be within the regulatory evaluation factors. The staff also concludes that the atmospheric dispersion factors used by SNC are acceptable. Tables 15-12, 15-21, and 15-22 in the SSAR (section 15.4, at 15-17, 15-22) show that the calculated exclusion area boundary doses for pipe break and fuel handling accidents are within about 40 percent of the regulatory limits. Please expand on the basis for assuring that the atmospheric dispersion factors used in these calculations (Table 15-11, at 15-16, in the SSAR) are sufficiently conservative to support the conclusions.

Note:

All citations refer to the Advanced SER (Nov. 2008 version) unless otherwise noted. Citations to the SSAR refer to Revision 4.

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NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
SOUTHERN NUCLEAR OPERATING) Docket No. 52-011-ESP
COMPANY)
)
(Early Site Permit for the Vogtle ESP Site))

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB MEMORANDUM AND ORDER (PROVIDING INITIAL QUESTIONS AND POTENTIAL PRESENTATION TOPICS ASSOCIATED WITH MANDATORY HEARING ON SAFETY MATTERS) have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Nancy Greathead]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 5th day of December 2008