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Date: 4/4/2007 4:37:09 PM
Subject: Southern Nuclear Operating Company (SNC) Early Site Permit (ESP) Application for the

Vogtle ESP Site Summary of Telephone Call Held on February 23, 2007

To: Stephanie Coffin
From: Christian Araguas
Date: April 4, 2007
Accession No.: ML070580302

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Creation Date: 4/4/2007 4:37:09 PM
From: Tony Wade

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None

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Security: Standard

March 19, 2007

MEMORANDUM TO: Stephanie M. Coffin, Branch Chief
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

FROM: Christian Araguas, Project Manager **/RA/**
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SOUTHERN NUCLEAR OPERATING COMPANY (SNC) EARLY SITE PERMIT (ESP) APPLICATION FOR THE VOGTLE ESP SITE-SUMMARY OF TELEPHONE CALL HELD ON FEBRUARY 23, 2007

This memorandum documents a telephone conference between the U.S. Nuclear Regulatory Commission staff and SNC on February 23, 2007.

A summary of the call and the draft requests for additional information pertaining to the site safety analysis report discussed during the teleconference are enclosed.

Docket No. 52-011

Enclosure:
As stated

MEMORANDUM TO: Stephanie M. Coffin, Branch Chief
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

FROM: Christian Araguas, Project Manager **/RA/**
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SOUTHERN NUCLEAR OPERATING COMPANY (SNC) EARLY SITE PERMIT (ESP) APPLICATION FOR THE VOGTLE ESP SITE-SUMMARY OF TELEPHONE CALL HELD ON FEBRUARY 23, 2007

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Docket No. 52-011

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As stated

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OFFICE	DNRL/NWE1/LA	DNRL/NWE1/PM	DNRL/NWE1/BC
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DATE	03/08/07	03/05/07	03/19/07

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Telephone Call Summary

Subject: Request for Additional Information (RAI) Letter No. 4

Date of Call: February 23, 2007

Participants

NRC	SNC	Bechtel
Christian Araguas Brad Harvey Joseph Hoch	Jim Davis	Bob Prunty Dan Patton et al.

Referenced documents

Accession Number	Title	Date
ML063210516	Vogtle Electric Generating Plant Units 3 & 4 Early Site Permit Application	Revision 1 - November 2006

Actions

Topic	NRC	Applicant
RAI Letter on SSAR Section 2.3	Update draft RAIs based on discussions and issue final RAI letter on February 23, 2007	Provide timely response to NRC staff's request for additional information.

Other Discussion

On February 20, 2007, the U.S. Nuclear Regulatory Commission staff conducted a phone call with Southern Nuclear Operating Company (SNC) to discuss the proposed requests for additional information (RAI) to be issued on February 23, 2007. During the phone call SNC expressed concern over draft RAIs 2.3.4-4. Both the staff and the applicant agreed to look at the analysis that was conducted and setup a followup phone call to discuss further the discrepancy between the staff's work and the applicant's work. On February 23, 2007 the staff conducted the followup phone call to discuss draft RAI 2.3.4-4. SNC stated that the summary table from the PAVAN output file was not correct and they used the "raw" overall site χ/Q data instead to calculate the overall site 5 percentile χ/Q value. The staff disagreed with this approach and said that Regulatory Guide (RG) 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants," Section C.3, "Determination of 5 percent overall site χ/Q value" states the following:

Enclosure

> *"Using the χ/Q values calculated according to regulatory position 1, an overall cumulative probability distribution for all directions combined should be constructed. A plot of χ/Q versus probability of being exceeded should be made, and* ***an upper bound curve should be drawn****.* ***The 2-hour χ/Q value that is exceeded 5 percent of the time should be selected from this curve*** *as representing the dispersion condition indicative of the type of release being considered."*

The staff said that an upper bound curve should have been generated, which would have yielded a different value than was proposed by SNC. SNC said that it followed NUREG/CR-2858, "PAVAN: An Atmospheric Dispersion Program for Evaluating Design Basis Accidental Releases of Radioactive Materials from Nuclear Power Stations," which they interpreted as saying not to develop an upper bound curve. The staff said that if the intent is to meet RG 1.145 that SNC needs to reconsider what has been provided. The staff also said that if RG 1.145 is not being followed, this is acceptable, but that SNC would need to clearly explain the approach that it has decided to take for developing the 0–2 hour EAB χ/Q value. SNC said that it understood the staff's comments and would followup as needed.

RAI Number	Reviewer	Question Summary	Full Text
2.3.1-1	Harvey R. B Hoch J	Provide the criteria used to select the regional climatological observing stations.	The response to information need 2.3.1-2 enclosed in SNC letter AR-07-0059 (dated January 30, 2007) explains the selection criteria for the regional climatological observing stations used in the SSAR to characterize the regional climatology of the Vogtle ESP site. Please include these selection criteria in a future revision to the ESP Application.
2.3.1-2	Harvey R. B Hoch J	Confirm the proposed 100-year snowpack site characteristic value.	Part I of SSAR Table 1-1 lists the 100-Year Snow Pack site characteristic value as 10 lb/sq ft. The Vogtle ESP region experienced its heaviest snowfall event on record from February 9 through February 11, 1973. The highest recorded amount of snow in the Vogtle ESP site vicinity, 22 inches, occurred at Bamberg, SC. The Southeast Regional Climate (SERCC) states that the liquid equivalent of the snowfall at Bamberg was 7.79 inches. Assuming one inch of liquid water is equivalent to 5.2 lb/sq ft, the associated snowpack during this event was 40.5 lb/sq ft. Please justify why the 100-year snowpack of 10 lb/sq ft listed as a site characteristic is conservative enough given the impact from this storm.
2.3.1-3	Harvey R. B Hoch J	Ensure the SSAR identifies all the site characteristics necessary to compare against the AP1000 DCD site parameters.	SSAR Section 1.1 states that the Westinghouse AP1000 certified reactor design has been selected for the VEGP ESP Application. Tier 1 Table 5.0-1 and Tier 2 Table 2-1 of the AP1000 DCD identify the site-related parameters for which the AP1000 plant is designed. An actual site is acceptable if its site characteristics fall within the AP1000 plant site design parameters listed in these two tables. (a) AP1000 DCD Tier 1 Table 5.0-1 lists historical maximum dry bulb temperature with a mean coincident wet bulb (MCWB) temperature as a Tier 1 site parameter. The staff considers the "historical maximum dry bulb temperature with a MCWB temperature" DCD site parameter to be equivalent to the "100-year return period maximum dry bulb temperature with a MCWB temperature" ESP site characteristic. SSAR Table 1.1 presents a 100-year return period maximum dry bulb temperature as a site characteristic without a corresponding MCWB temperature. Please provide a "100-year return period maximum dry bulb temperature with a MCWB temperature" as a site characteristic. (b) AP1000 DCD Tier 2 Table 2-1 lists the following Tier 2 site parameters: (1) maximum normal (1 percent exceedance) dry bulb temperature and coincident wet bulb temperature, and (2) maximum normal (1 percent exceedance) noncoincident wet bulb temperature. Please provide site characteristic values consistent with these AP1000 Tier 2 site parameters. The information requested above will be necessary during the combined license (COL) review.
2.3.1-4	Harvey R. B Hoch J	Discuss the consequences of the proposed 100-year return period maximum wet-bulb temperature site	The 100-year return period maximum wet-bulb temperature (noncoincident) site characteristic value of 88 °F listed in SSAR Table 1-1 exceeds the historical maximum site parameter value of 81 °F listed in AP1000 DCD Tier 1 Table 5.0-1 and Tier 2 Table 2-1. Please discuss the potential implications of the

RAI Number	Reviewer	Question Summary	Full Text
		characteristic value exceeding the corresponding AP1000 DCD site parameter value.	Vogtle ESP 100-year return period maximum wet-bulb temperature site characteristic value exceeding the AP1000 DCD maximum historical wet bulb temperature site parameter value.
2.3.3-1	Harvey R. B Hoch J	Provide a copy of the updated hourly onsite meteorological database.	The response to information need 2.3.3-1 enclosed in SNC letter AR-07-0059 (dated January 30, 2007) states that the 5-year hourly onsite meteorological database submitted in support of the ESP Application is being revised and reformatted in response to questions regarding the meteorological database discussed during a site audit conducted on December 6, 2006. Please provide a copy of this revised hourly onsite meteorological database.
2.3.3-2	Harvey R. B Hoch J	Update the SSAR Table 1-1 list of design parameters to include the height and width of the proposed natural draft cooling tower.	Part II of SSAR Table 1-1 lists postulated design parameters. Please include the proposed natural draft cooling tower height and width as part of this table since this information is used in SSAR Section 2.3.3 to determine the potential impact of the natural draft cooling tower wake effects on the onsite meteorological measurements.
2.3.4-1	Harvey R. B Hoch J	Revised the SSAR Table 1-1 description and reference for the accident atmospheric dispersion factors site characteristics.	The description and reference for the accident atmospheric dispersion factors listed in SSAR Table 1-1 states, in part: "The atmospheric dispersion values presented represent typical site parameter values by reactor vendors." This is an inaccurate statement. The accident atmospheric dispersion factors listed in Table 1-1 represent site-specific values.
2.3.4-2	Harvey R. B Hoch J	Explain how Appendix E to 10 CFR Part 50 is applicable to SSAR Section 2.3.4.	SSAR Table 1-2 indicates that SSAR Section 2.3.4 is in compliance with the regulatory requirements of Appendix E to 10 CFR Part 50. Please explain how Appendix E to 10 CFR 50 is applicable to the development of the short-term (accident releases) atmospheric dispersion site characteristics presented in SSAR Section 2.3.4.
2.3.4-3	Harvey R. B Hoch J	Explain how RG 1.78 is applicable to SSAR Section 2.3.4.	Likewise, SSAR Table 1-2 indicates that SSAR Section 2.3.4 conforms with RG 1.78. Please explain how RG 1.78 is applicable to the development of the short-term (accident releases) atmospheric dispersion site characteristics presented in SSAR Section 2.3.4.
2.3.4-4	Harvey R. B Hoch J	Confirm which set of accident χ/Q values (the maximum sector 0.5 percentile χ/Q values or the overall site 5 percentile χ/Q values) are bounding.	Section 2.3.4 of the SSAR states that the 0-2 hour maximum sector-dependent 0.5 percentile χ/Q values are greater than the corresponding overall site 5 percentile χ/Q values at the EAB and LPZ. The staff ran the PAVAN computer code using the PAVAN input files provided during a site audit conducted on December 6, 2006 and found the overall site 5 percentile χ/Q values at the EAB and LPZ are the limiting values for the site. Please confirm which set of χ/Q values (the maximum sector 0.5 percentile χ/Q values or the overall site 5 percentile χ/Q values) are bounding.
2.3.4-5	Harvey R. B Hoch J	Provide a copy of the updated PAVAN input file.	The response to information need 2.3.4-1 enclosed in SNC letter AR-07-0059 (dated January 30, 2007) states that the 5-year hourly onsite meteorological data used as part of the ESP Application is being revised and therefore the PAVAN input files will be affected. Please provide a copy of the updated

RAI Number	Reviewer	Question Summary	Full Text
			PAVAN input file.
2.3.5-1	Harvey R. B Hoch J	Update the SSAR Table 1-1 list of design parameters to include containment building minimum cross-sectional area and equivalent structural height.	Part II of SSAR Table 1-1 lists postulated design parameters. Please include containment building minimum cross-sectional area and equivalent structural height as part of this table since this information has been used as input to XOQDOQ computer code to derive the long-term (routine release) atmospheric dispersion estimates presented in SSAR Section 2.3.5.
2.3.5-2	Harvey R. B Hoch J	Clarify the definition of the "8.00 Day Decay" χ/Q values listed in SSAR Table 2.3-17.	Are the "8.00 Day Decay" χ/Q values listed in SSAR Table 2.3-17 also "depleted" χ/Q values; that is, are these the χ/Q values that result from assuming the plume travels downwind with dry deposition as well as decay with a half-life of 8.00 days?
2.3.5-3	Harvey R. B Hoch J	Explain how Appendix E to 10 CFR Part 50 is applicable to SSAR Section 2.3.5.	SSAR Table 1-2 indicates that SSAR Section 2.3.5 is in compliance with the regulatory requirements of Appendix E to 10 CFR Part 50. Please explain how Appendix E to 10 CFR Part 50 is applicable to the development of the long-term (routine release) atmospheric dispersion site characteristics presented in SSAR Section 2.3.5.
2.3.5-4	Harvey R. B Hoch J	Provide a copy of the updated XOQDOQ input file.	The response to information need 2.3.5-1 enclosed in SNC letter AR-07-0059 (dated January 30, 2007) states that the 5-year hourly onsite meteorological data used as part of the ESP Application is being revised and therefore the XOQDOQ input files will be affected. Please provide a copy of the updated XOQDOQ input file.
2.3.5-5	Harvey R. B Hoch J	Justify not using the VEGP ODCM terrain recirculation factors in developing the routine release atmospheric dispersion factors presented in SSAR Section 2.3.5.	Section 5.4.1.2 and Table 5.4-3 of Revision 0 to the ER state that the equations and parameters in the VEGP Offsite Dose Calculation Manual (ODCM) were used to calculate the doses to offsite receptors from the proposed Vogtle ESP units. Chapter 8 of Revision 21 of the VEGP ODCM (dated October 1, 2003) presents the models used to compute the specific values of meteorological-related parameters that are referenced throughout the VEGP ODCM. ODCM Equations 8.1 and 8.3, which present the algorithms used to calculate χ/Q values for ground-level releases and elevated releases, respectively, both contain terrain recirculations factor (K_r) that were taken from Appendix A of Reference 15 (i.e., Letter to Southern Company Services from Pickard, Lowe, and Garrick, Inc., Washington, D.C., April 27, 1988). (a) Please provide a copy of the terrain recirculation factors used in the VEGP ODCM. (b) Please describe the basis for the derivation of these terrain recirculation factors. (c) Please justify why the terrain recirculation factors used in the VEGP ODCM should not be used in developing the long-term (routine release) atmospheric dispersion factors presented in SSAR Section 2.3.5.

RAI Number	Reviewer	Question Summary	Full Text
2.3.5-6	Harvey R. B Hoch J	Provide annual average χ/Q and D/Q values in all 16 radial sectors from the site boundary to a distance of 50 miles from the proposed Vogtle ESP facility.	Section II.D of Appendix I to 10 CFR Part 50 requires that gaseous radwaste systems for light-water-cooled nuclear power reactors include all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit return, can, for a favorable cost-benefit ratio, effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. The COL or CP applicant will be required to perform this demonstration at the COL or CP stage. In order to avoid providing additional atmospheric dispersion estimates at the COL or CP stage, please provide annual average χ/Q and D/Q values in all 16 radial sectors from the site boundary to a distance of 50 miles from the proposed Vogtle ESP facility in accordance with Section 2.3.5 of RS-002.