VogtlecolRAIsPEm Resource

From: Christian Araguas
Sent: Friday, December 19, 2008 4:29 PM
To: VogtlecolRAIsPEm Resource
Subject: Request for Additional Information Letter No. 025 Related to SRP Section 08.02 for the Vogtle 3 and 4 Combined License Application
Attachments: VOG-RAI-LTR-025.doc

Christian Araguas
Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Hearing Identifier: Vogtle_COL_eRAIs
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Subject: Request for Additional Information Letter No. 025 Related to SRP Section 08.02 for the Vogtle 3 and 4 Combined License Application
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From: Christian Araguas

Created By: Christian.Araguas@nrc.gov

Recipients:
"VogtlecolRAIsPEm Resource" <VogtlecolRAIsPEm.Resource@nrc.gov>
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Reply Requested: No
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December 19, 2008

Mr. Joseph A. (Buzz) Miller
Senior Vice President
Southern Nuclear Operating Company
P.O. Box 1295
Birmingham, AL 35201

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 025 RELATED TO SRP SECTIONS 08.02 FOR THE VOGTLE ELECTRIC GENERATING PLANT UNITS 3 AND 4 COMBINED LICENSE APPLICATION

Dear Mr. Miller:

By letter dated March 28, 2008, Southern Nuclear Operating Company (SNC), submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advance passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 30 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, you may contact me for the Vogtle Electric Generating Plant combined license at 301-415-3637.

Sincerely,

/**RA**/

Christian Araguas
Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-025
52-026

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me for the Vogtle Electric Generating Plant combined license at 301-415-3637.

Sincerely,

/**RA**/

Christian Araguas
Lead Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-025
52-026
eRAI Tracking No. 1596

Enclosure:
Request for Additional Information

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DATE	12/01/08	12/5/08	12/08/08	12/19/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 1596 Revision 1
12/19/2008
Vogtle
Southern Nuclear Operating Co.
Docket No. 52-0025 and 52-0026
SRP Section: 08.02 - Offsite Power System
Application Section: 8.2

QUESTIONS for Electrical Engineering Branch (EEB)

08.02-1
RAI-SRP 8.2-EEB-01

In order for the NRC staff to confirm that the single offsite power circuit provided from the transmission network satisfies the requirements of GDC (General Design Criterion) 17, provide the voltage and frequency variations expected at all switchyards. Confirm that these voltage and frequency limits are acceptable for auxiliary power system equipment operation and Class 1E battery chargers during different operating conditions. The confirmation should include the following calculations: load flow analysis (bus and load terminal voltages of the station auxiliary system); short circuit analysis; equipment sizing studies; protective relay setting and coordination; and motor starting with minimum and maximum grid voltage conditions. A separate set of calculations should be performed for each available connection to an offsite power supply. In addition, discuss how the results of the calculations will be verified before fuel loading.

08.02-2
RAI-SRP 8.2-EEB-2

RG 1.206, C.III.1, Position C.I.8.2.1 states that a COL applicant for passive design should provide a discussion in the FSAR of how the single designated offsite power circuit from the transmission network conforms with the requirements of GDCs 2, 4, 5, 17 and 18 (also see guidance in Standard Review Plan Section 8.2.II). Discuss how the FSAR addresses this consideration or justifies an alternative, as well as how Southern Nuclear Operating Company intends to meet the requirements of 10 CFR 50.65 with respect to maintenance of onsite and offsite power system components.

08.02-3
RAI-SRP 8.2-EEB-3

The final paragraph of GDC 17 requires, in part, provisions to minimize the probability of the loss of power from the transmission network given a loss of the power generated by the nuclear power unit(s). Describe any limits on the main generator MVAR output such that loss of the main generator will not result in an unacceptable voltage in the switchyards. Describe any auxiliary transmission system equipment, such as capacitor banks, static VAR compensators that may be necessary to offset loss of MVAR support on loss of the main generator.

08.02-4
RAI-SRP 8.2-EEB-4

Section 8.2.1.1 of the FSAR discusses the results of the Failure Mode and Effects Analysis (FMEA) of the Vogtle Electric Generating Plant switchyards. In order for the staff to evaluate the FMEA, describe in detail how each event (a breaker not operating during a fault on an offsite line; fault on a switchyard bus; a spurious relay trip; and a loss of control power) in the FMEA was evaluated to conclude that the offsite power to each unit is not lost.

08.02-5
RAI-SRP 8.2-EEB-5

Standard Review Plan (SRP, NUREG-0800) Section 8.2.III.F states that "[t]he results of the grid stability analysis must show that loss of the largest single supply to the grid does not result in the complete loss of preferred power. The analysis should consider the loss, through a single event, of the largest capacity being supplied to the grid, removal of the largest load from the grid, or loss of the most critical transmission line." Describe how your design satisfies the SRP, and provide the analysis results, or justify an alternative.

08.02-6
RAI-SRP 8.2-EEB-6

Section 8.2.1.1 of the applicant's FSAR, Subsection "Transmission System Operator (TSO)," describes the VEGP's relationship with its TSO, Southern Company Transmission (SCT). It also describes the entire hierarchy of entities involved in the transmission grid operations and the communication protocols among them: "Southern Company Transmission (SCT) is the TSO within the SBAA and is responsible for the safe and reliable operation of the SBAA transmission grid. The SBAA is located within the SERC Reliability Corporation, one of the regional corporations within the North American Electric Reliability Corporation (NERC). SCT has responsibility for Transmission Planning and Operation of the bulk power transmission system. The Operation is performed by the Georgia Transmission Control Center (GCC) in Atlanta, Georgia and Bulk Power Operations (BPO) organization. The BPO control center is also known as the Power Coordination Center (PCC) and is located in Birmingham, Alabama...The PCC/GCC continuously monitors and evaluates grid reliability and switchyard voltages, and informs plant operations of any potential grid instability or voltage inadequacies... If a condition arises where the SBAA transmission grid cannot supply adequate offsite power, plant operators are notified and appropriate actions are taken... In addition, plant operators inform the PCC/GCC of changes in generation ramp rates and notify them of any developing problems that may impact generation."

As offsite power is shared between the existing VEGP, Units 1 and 2, how is the above notification coordinated between the system operator and the operators of VEGP, Units 3 and 4? In addition, does the interface agreement require that the operators be notified of periods when the system operator is unable to determine if offsite power voltage and capacity is inadequate?

08.02-7
RAI-SRP 8.2-EEB-7

Section 8.2.1.4 of the FSAR discusses maintenance, testing, and calibration practices that SCT follows. It states that PD follows its own field test manuals, vendor manuals, industry's maintenance practices, and observes NERC reliability standards. Explain what is meant by 'observes'? Explain whether this statement is intended to indicate that SCT will follow the NERC standards for switchyard maintenance and testing.

08.02-8
RAI-SRP 8.2-EEB-08

Section 8.2.2 of the applicant's FSAR discusses grid stability studies for load flow, transient stability, and fault analysis. In this regard, please provide the following additional information:

a) Provide the assumptions and conditions used in the analysis.
b) Provide the switchyard voltages assumed in the study.
c) Does this analysis include worst-case disturbances for which the grid has been analyzed to remain stable?
d) Did the analysis include station auxiliary loads for all four units?
e) Identify the software used for this study.
f) How often is this study performed?

08.02-9
RAI - SRP 8.2- EEB-09

Section 8.2.2 of the FSAR states that "[i]n order to maintain Reactor Coolant Pump (RCP) operation for three seconds following a turbine trip as specified in DCD Subsection 8.2.2, the grid voltage at the high-side of the GSU, and RATs cannot drop more than 15 percent from the pre-trip steady-state voltage." In this regard, provide the following information:

Is this voltage based on worst expected switchyard voltage?