

PMSummerColpEM Resource

From: Tanya Simms
Sent: Thursday, January 08, 2009 10:49 AM
To: 'Amy M. Monroe'; 'April R. Rice'; 'Jerry P. Harrison'; 'Julie M. Giles'
Cc: Ravindra Joshi; PMSummerColpEM Resource
Subject: Draft RAI 1772 Related SRP Section 8.2 for Summer Units 2 and 3
Attachments: RAI 1772 draft.pdf

To All,

Attached is Draft RAI 1772 related to SRP Sections 8.2 for Summer Units 2 and 3. Please contact me if you desire a phone conference regarding this RAI. If no response is heard by close of business January 12, 2009, the final RAI will be issued.

Thank you,
Tanya

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Options

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Request for Additional Information No. 1772 Revision 0
Virgil C. Summer Nuclear Station, Units 2 and 3
South Carolina Electric and Gas Company
Docket No. 52-027 and 52-028
SRP Section: 08.02 - Offsite Power System
Application Section: 8.2

QUESTIONS from Electrical Engineering Branch (EEB)

08.02-***

RAI – SRP 8.2 – EEB - 02

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-***

RAI – SRP 8.2 – EEB - 03

RG 1.206, Part I, 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 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 South Carolina Electric & Gas intends to meet the requirements of 10 CFR 50.65 with respect to maintenance of onsite and offsite power system components.

08.02-***

RAI – SRP 8.2 – EEB - 04

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, and static VAR compensators that may be necessary to offset loss of MVAR support on loss of the main generator.

08.02-***

RAI – SRP 8.2 – EEB - 05

RG 1.206, Part I, Position C.I.8.2.1 discusses the examination of the Failure Mode and Effects Analysis (FMEA) submitted by the applicant. 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-***

RAI – SRP 8.2 – EEB - 06

Since offsite power is shared between the existing V.C. Summer Unit 1 and the proposed Units 2 and 3, how are notifications regarding changes in grid conditions coordinated between the system operator and the operators of V.C. Summer Unit 1, and Units 2 and 3? 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-***

RAI – SRP 8.2 – EEB - 07

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 must remain above the required AP1000 minimum grid voltage limit." In this regard, provide the following information:

- a. Is this voltage based on worst expected switchyard voltage?
- b. Describe the effect of a voltage drop below the AP1000 minimum grid voltage limit on the operation of the onsite auxiliary power system equipment and the Class 1E battery chargers and regulating transformers.
- c. Discuss the effects of over voltage (that could occur during turbine trip or loss of load) on the Class 1E battery chargers and regulating transformers.

08.02-***

RAI – SRP 8.2 – EEB - 08

RG 1.206, Part I, Position C.I.8.2.1 states that “[t]he results of the grid stability analysis should show that loss of the largest single supply to the grid does not result in the complete loss of preferred power. The analysis should also consider the loss, as a result of a single event, of the largest generation 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 RG 1.206, or justify an alternative. Provide the results of the analysis along with the following information:

- a) Does this analysis include worst-case disturbances for which the grid has been analyzed to remain stable?
- b) Did the analysis include station auxiliary loads for all three units?
- c) How often is this study performed?

08.02-***

RAI – SRP 8.2 – EEB - 09

Section 8.2.1.4 of the FSAR discusses maintenance, testing, and calibration practices that SCE&G follows. It states that the TSO follows its own field test manuals, vendor manuals, industry’s maintenance practices, and observes FERC requirements and NERC reliability standards. Explain what is meant by ‘observes’? Explain whether this statement is intended to indicate that SCE&G will follow these requirements and standards for switchyard maintenance and testing.