

HarrisRAIsPEm Resource

From: Tanya Simms
Sent: Thursday, October 23, 2008 1:47 PM
To: HarrisRAIsPEm Resource
Subject: Request for Additional Information Letter No. 034 Related To SRP Section 08.02 for the Harris Units 2 and 3 Combined License Application
Attachments: HAR-RAI-LTR-034.doc

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Subject: Request for Additional Information Letter No. 034 Related To SRP Section 08.02
for the Harris Units 2 and 3 Combined License Application
Sent Date: 10/23/2008 1:47:05 PM
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From: Tanya Simms

Created By: Tanya.Simms@nrc.gov

Recipients:
"HarrisRAIsPEm Resource" <HarrisRAIsPEm.Resource@nrc.gov>
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October 23, 2008

James Scarola
Senior Vice President and
Chief Nuclear Officer
PO Box 1551
411 Fayetteville Street Mall
Raleigh NC 27602

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 034 RELATED TO
SRP SECTION 08.02 FOR THE HARRIS UNITS 2 AND 3 COMBINED LICENSE
APPLICATION

Dear Mr. Scarola:

By letter dated February 18, 2008, Progress Energy 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 at 301-415-1387 or you may contact Manny Comar, the lead project manager for the Harris combined license at 301-415-3863.

Sincerely,

/RA/

Tanya Simms, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-022
52-023

Enclosure:
Request for Additional Information

CC: see next page

If you have any questions or comments concerning this matter, you may contact me at 301-415-1387 or you may contact Manny Comar, the lead project manager for the Harris combined license at 301-415-3863.

Sincerely,

/RA/

Tanya Simms, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-022
52-023
ERA1 Tracking No. 1457

Enclosure:
Request for Additional Information

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NRO-002

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NAME	RJenkins*	TSimms*	AGendelman*	MComar*
DATE	10/03/08	10/07/08	10/16/08	10/23/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 1457 Revision 0
Shearon Harris
Progress Energy Carolinas, Inc.
Docket No. 52-022 and 52-023
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-04

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 main step-up and reserve auxiliary transformers can not drop from the pre-trip steady-state value by more than 15 percent of the rated voltage." 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 of 15% on the operation of the onsite auxiliary power system equipment and the Class 1E battery chargers and regulating transformers.
- c. Also, 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.

08.02-2

RAI-SRP 8.2-EEB-05

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 the 230 kV 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.

08.02-3

RAI-SRP 8.2-EEB-06

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 three units?
- e) Identify the software used for this study.
- f) How often is this study performed?

08.02-4

RAI-SRP 8.2-EEB-7

The final paragraph of 10 C.F.R. Part 50, Appendix A, General Design Criterion 17, concerning electrical powers systems, requires that provisions "shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies." Describe any limits on the main generator MVAR (million volt amperes reactive) output such that loss of the main generator will not result in an unacceptable voltage at the switchyards. Describe any auxiliary transmission system equipment, such as capacitor banks or static VAR compensators that may be necessary to offset loss of MVAR support on loss of the main generator.