May 23, 2008

Ms. Andrea L. Sterdis
Manager, Nuclear Licensing & Industry Affairs
Nuclear Generation Development & Construction
Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 026 RELATED TO SRP SECTION 08.02 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION

Dear Ms. Sterdis:

By letter dated September 30, 2007, as supplemented by letters dated November 2, 2007, January 8, 2008 and January 14, 2008, Tennessee Valley Authority (TVA) 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 the Public Meeting Scheduled for June 10, 2008. 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 Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

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

Docket Nos. 52-014
52-015

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 Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

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

Docket Nos. 52-014
52-015
eRAI Tracking No. 177

Enclosure:
Request for Additional Information

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NAME	DCurtis*	TSimms*	PMoulding*	JSebrosky*
DATE	4/15/08	5/14/08	5/19/08	5/22/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 177 Revision 0
Bellefonte Units 3 and 4
Tennessee Valley Authority
Docket No. 52-014 and 52-015
SRP Section: 08.02 – Electrical Power
Application Section: 8.2 – Electrical Power

QUESTIONS from Electrical Engineering Branch (EEB)

08.02-1
SRP 8.2-01 Section 8.2.2 of the FSAR states that in order to maintain reactor coolant pump operation for 3 seconds following a turbine trip, the grid voltage on the high side of the main step-up transformer (GSU) and reserve auxiliary transformers (RATs) cannot drop more than 15 percent from the pre-trip steady-state voltage. In this regard, provide the following information: a. What is this pre-trip steady-state voltage? Is it based on worst expected switchyard voltage? b. Is the 15% voltage drop criteria consistent with North American Electric Reliability Corporation (NERC) criteria (or those of a local reliability council)? c. Clarify how the isophase bus steady-state voltage would be maintained within 0.95 – 1.05 per unit if the switchyard voltage is allowed to drop 15%. d. Describe the effect of voltage drop of 15% on the operation of the onsite auxiliary power system equipment including the Class 1E battery chargers and uninterruptible power supplies.

08.02-2
SRP 8.2-03 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, as well as how TVA intends to meet the requirements of 10 CFR 50.65.

08.02-3
SRP 8.2-04 In order for the staff to confirm that the single offsite power circuit provided from the transmission network satisfies the requirements of GDC 17, provide the voltage and frequency variations expected at the 500 kV switchyard. Confirm that these voltage and frequency limits are acceptable for auxiliary power system equipment operation 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; motor starting with minimum and maximum grid voltage conditions. A separate set of calculations should be performed for each available connection to offsite power supply. In addition, discuss how the results of the calculations will be verified before fuel load.

08.02-4
SRP 8.2-05 Section 8.2.2 of the BNL FSAR discusses grid stability studies and the assumptions made for load flow, transient stability, and fault analysis. The staff notes that the stability study analyzed used the summer off-peak base case while the load flow studies analyzed used summer peak base case. In this regard provide the following information: a. Explain why the stability studies used a summer off-peak base case while the load flow study used the summer peak base case. b. Provide TVA's basis for choosing the grid voltage of 515 kV in lieu of minimum expected grid voltage in TVA's analysis. c. Explain whether this analysis includes worst-case disturbances for which the grid has been analyzed to remain stable.

08.02-5
SRP 8.2-06 Section 8.2-1of the FSAR states that "The secondary windings (500 kV side) of the GSU are connected in wye configuration and connected to the 500 kV switchyard." Clarify whether this statement should refer to the primary winding of the transformer connected to the switchyard.

08.02-6
SRP 8.2-07 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 switchyard. 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.

08.02-7
SRP 8.2-08 Section 8.2..2 of the FSAR states that "the grid stability analysis has confirmed that the interface requirements for steady state load, inrush kVA for motors, nominal voltage, allowable voltage regulation, nominal frequency, allowable frequency fluctuation, maximum frequency decay rate, and limiting under frequency values for RCP have been met." Provide the summary of the grid stability analysis results, the assumptions made, and the acceptance criteria used for the each case analyzed. In addition, provide the nominal frequency, allowable frequency fluctuation, maximum frequency decay rate and limiting under frequency values used for the RCPs in the analysis.

08.02-8
SRP 8.2-09 Section 8.2.1.4 of the FSAR discusses maintenance, testing, and calibration practices that Power Systems Operations (PSO) follows. It states that PSO also observes Federal Energy Regulatory Commission (FERC) requirements and NERC reliability standards. Explain whether this statement is intended to indicate that TVA will follow the FERC and NERC standards for switchyard maintenance and testing.