May 13, 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. 017 RELATED TO SRP SECTION 14.02 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 45 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 301-415-9967 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Brian C. Anderson, 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 301-415-9967 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Brian C. Anderson, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015
eRAI Tracking No. 172

Enclosure:
Request for Additional Information

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OFFICE	CPIB/BC		NWE1/PM	OGC	NWE1/L-PM
NAME	DCurtis*		BAnderson*	PMoulding*	JSebrosky*
DATE	4/15/08		5/06/08	5/08/08	5/09/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information
Bellefonte Units 3 and 4
Tennessee Valley Authority
Docket No. 52-014 and 52-015
SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants
Application Section: 14.2

QUESTIONS from Electrical Engineering Branch

14.02-1

Offsite AC Power Systems Section 14.2.9.4.23 of the FSAR states that the offsite alternating current (AC) power system components undergo a series of individual component and integrated system preoperational tests to verify that the off-site AC power system performs in accordance with the associated component design specifications. The individual component and integrated tests include:

a. Availability of AC and direct current (DC) power to the switchyard equipment is verified.
b. Operation of high voltage (HV) circuit breakers is verified.
c. Operation of HV disconnect switches and ground switches is verified.
d. Operation of substation transformers is verified.
e. Operation of current transformers, voltage transformers, and protective relays is verified.
f. Operation of switchyard equipment controls, metering, interlocks, and alarms that affect plant off-site AC power system performance is verified.
g. Design limits of switchyard voltages and stability are verified.
h. Under simulated fault conditions, proper function of alarms and protective relaying circuits is verified.

The above list should include the following items:

• Operation of instrumentation and control alarms used to monitor switchyard equipment status.
• Proper operation and load carrying capability of breakers, switchgear, transformers, and cables.
• Proper operation of the automatic transfer capability of the preferred power supply to the maintenance power supply through the reserve auxiliary transformer.
• Operation of main generator in islanding mode is verified to ensure that the onsite power system equipment including the Class 1E battery chargers and uninterruptible power supplies can withstand the voltage spike from the generator following isolation from the grid.
• Switchyard interface agreement and protocols are verified.

Please revise section 14.2.9.4.23 to include the above items, or justify their exclusion.

14.02-2

The AP1000 DCD provides interface requirements for the transmission switchyard and onsite power system in accordance with 10 CFR 52.79(b) under Tier 2 interface requirements. Specifically, Summary Table 1.8-1, “Plant Interfaces with the Remainder of Plant,” of Tier 2 requires the COL applicant to address offsite AC requirements (item 8.2) for steady-state load, inrush kVA for motors, nominal voltage, allowable voltage regulation, nominal allowable frequency fluctuation, maximum frequency decay rate, and limiting under-frequency value for the reactor coolant pump (RCP). It further requires the offsite transmission system analysis (item 8.3) for loss of the AP1000 unit or the largest unit, for

voltage operating range, for maintaining transient stability, and for the RCP bus voltage to remain above the voltage required to maintain the flow assumed in Chapter 15 analyses for a minimum of three seconds following a turbine trip. Discuss how the preoperational test performed under 14.2.9.4.23 (General Test Methods and Acceptance Criteria) for BLN verifies all requirements cited in 8.2 and 8.3 of AP1000 DCD Tier 2.