Tennessee Valley Authority, 1101 Market Street, LP 5A, Chattanooga, Tennessee 37402-2801

May 11, 2009

10 CFR 52.79

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

In the Matter of) Docket No. 52-014 and 52-015
Tennessee Valley Authority)

BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – OFFSITE POWER SYSTEM ITAAC

Reference: 1) Letter from Brian C. Anderson (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 027 Related to SRP Section 14.03 for the Bellefonte Units 3 and 4 Combined License Application, dated May 28, 2008.

2) Letter from Andrea L. Sterdis (TVA) to NRC Document Control Desk, Response to Request for Additional Information – Offsite Power ITAAC, Bellefonte Units 3 and 4 Combined License Application, dated June 24, 2008.

This letter provides the Tennessee Valley Authority (TVA) revised response (Reference 2) to the Nuclear Regulatory Commission (NRC) request for additional information (RAI) items included in Reference 1.

A response to each NRC request in the Reference 1 letter is addressed in the enclosure. The enclosure identifies any associated changes that will be made in a future revision of the BLN application.

If you should have any questions, please contact Tom Spink at 1101 Market Street, LP5A, Chattanooga, Tennessee 37402-2801, by telephone at (423) 751-7062, or via email at tespink@tva.gov.

D085
NRO

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 11th day of May, 2009.

Sincerely,

Andrea L. Sterdis
Manager, New Nuclear Licensing and Industry Affairs
Nuclear Generation Development & Construction

Enclosure
cc: See Page 3

cc: (w/Enclosure)

B.C. Anderson/NRC/HQ
J. P. Berger, EDF
E. Cummins, Westinghouse
S. P. Frantz, Morgan Lewis
M.W. Gettler, FP&L
R. C. Grumbir, NuStart
P. S. Hastings, NuStart
P. Hinnenkamp, Entergy
B. Hughes, NRC/HQ
M. C. Kray, NuStart
D. Lindgren, Westinghouse
G. D. Miller, PG&N
M. C. Nolan, Duke Energy
N. T. Simms, Duke Energy
K. N. Slays, NuStart
G. A. Zinke, NuStart

cc: (w/o Enclosure)

M. M. Comar, NRC/HQ
R. G. Joshi, NRC/HQ
R. H. Kitchen, PGN
M. C. Kray, NuStart
A. M. Monroe, SCE&G
C. R. Pierce, SNC
R. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ
J. M. Sebrosky, NRC/HQ

Responses to NRC Request for Additional Information letter No. 027 dated May 28, 2008
(5 pages, including this list)

Subject: Electrical power in the Final Safety Analysis Report

RAI Number	Date of TVA Response
14.03-01	June 24, 2008; Revised by this letter – see following pages

Associated Additional Attachments / Enclosures	Pages Included
None	

Enclosure
TVA letter dated May 11, 2009
RAI Responses

NRC Letter Dated: May 28, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 14.03-01

SRP 14.3-01 - The staff notes that ITAAC Screening Summary Table 14.3-201 of the BNL FSAR does not include a site-specific ITAAC entry for the transmission switchyard and offsite power system. RG 1.206, CIII.7.2, Site-Specific ITAAC, recommends that applicants develop ITAAC for the site-specific systems that are designed to meet the significant interface requirements of the standard certified design, that is, the site-specific systems that are needed for operation of the plant (e.g., offsite power). The offsite power system performs an important function in the passive designs as it provides power to the safety-related batteries (through battery chargers) during normal and accident conditions so that the batteries are not challenged unnecessarily. It also provides power to those active systems that provide defense-in-depth capabilities for reactor coolant makeup and decay heat removal. These active systems are the first line of defense to reduce challenges to the passive systems in the event of transients or plant upsets. Relatedly, under the AP1000 DCD's availability controls (see DCD Table 16.3-2), one offsite and one onsite ac power supply should be available during modes 5 and 6 with reduced inventory, when the loss of RNS cooling is important. In addition, the offsite power is required for charging batteries and for supplying plant safety loads at the end of 72 hours after recovery from a Station Blackout event. Although the AP1000 certified design was partially exempted from the requirements of GDC 17, the above function of the offsite power system in passive designs supports the need for ITAAC for these systems so that the NRC staff can verify that (1) the designed and installed systems, structures, or components of the offsite power systems will perform as designed and (2) the required single circuit from the transmission network satisfies the requirements of GDC 17 regardless of its low risk significance in the AP1000 design. Please justify why there are no ITAAC entries associated with offsite power, or revise Table 14.3-201 of the BNL FSAR to include ITAAC entries for the transmission switchyard and the offsite power system.

BLN RAI ID: 3190

BLN RESPONSE:

The original response to this RAI (June 24, 2008) is replaced in its entirety with the following response:

Site-specific ITAAC to address the offsite power system safety analysis requirements are being incorporated as shown below. These offsite power ITAAC are based on the grid transmission system, the transmission switchyard, and offsite circuits providing power to the onsite power system through either the main step-up transformer (GSU) / unit auxiliary transformer (UAT) or the reserve auxiliary transformer (RAT) supply. These offsite power ITAAC also address the cooling requirements of the Investment Protection Short-Term Availability Controls identified in DCD Section 16.3, Table 16.3-2, item 3.2. Part 10 of the COLA will be revised in a future amendment to incorporate the site-specific ITAAC as shown below.

This response is expected to be STANDARD for the S-COLAs. However, the revised text is partially plant-specific.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, Subsection 8.2.1.2 (with LMA of BLN COL 8.2-1), is revised from:

Add the following paragraph and subsections at the end of the DCD Subsection 8.2.1.2.

The transformer area for each unit contains the GSU, (3 single phase transformers plus one spare), three UATs, and two RATs. The two RATs are connected to the 500 kV to 230 kV transformer located in the 500 kV switchyard. The high side (500 kV) winding of the GSUs is connected in wye configuration to the 500 kV switchyard.

To read:

Add the following paragraph at the end of the first paragraph of DCD Subsection 8.2.1.2.

The transformer area for each unit contains the main stepup transformer (the GSU), (3 single phase transformers plus one spare), three unit auxiliary transformers (the UATs), and two reserve auxiliary transformers (the RATs). The two RATs are connected to the 500 kV to 230 kV transformer located in the 500 kV switchyard. The high side (500 kV) winding of the GSUs is connected in wye configuration to the 500 kV switchyard.

Add the following paragraph and subsections at the end of the DCD Subsection 8.2.1.2.

Each transformer is connected to the switchyard by an offsite circuit beginning at the switchyard side of the breaker(s) within the switchyard and ending at the high voltage terminals of the GSU and RATs.

2. COLA Part 2, Section 14.3, Table 14.3-201 entry for offsite power (with BLN SUP 14.3-2), is revised from:

ZBS	Transmission Switchyard and Offsite Power System	XX

To read:

ZBS	Transmission Switchyard and Offsite Power System	XX

3. COLA Part 2, Section 14.3, Table 14.3-201 legend, is revised to add:

XX = Selected for ITAAC

4. COLA Part 10, Appendix B, is revised to include the following new site-specific ITAAC from:

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.6.11:

2.6.12 Transmission Switchyard and Offsite Power System
No entry for this system.

To read:

Add the following information to the information provided in the referenced DCD Tier 1 following Section 2.6.11:

2.6.12 Transmission Switchyard and Offsite Power System

Inspection, Test, Analysis and Acceptance Criteria

Table 2.6.12-1 provides a definition of the inspections, tests, and/or analyses, together with associated acceptance criteria for the offsite power system.

Table 2.6.12-1
Offsite Power System

Design Commitment	Inspections, Tests, and Analyses	Acceptance Criteria
1. A minimum of one offsite circuit supplies electric power from the transmission switchyard to the interface with the onsite ac power system.	Inspections of the as-built offsite circuit will be performed.	At least one offsite circuit is provided from the transmission switchyard interface to the interface with the onsite ac power system.
2. Each offsite circuit interfacing with the onsite ac power system is adequately rated to supply assumed loads during normal, abnormal and accident conditions.	Analyses of the offsite power system will be performed to evaluate the as-built ratings of each offsite circuit interfacing with the onsite ac power system against the load assumptions.	A report exists and concludes that each as-built offsite circuit is rated to supply the load assumptions, during normal, abnormal and accident conditions.
3. During steady state operation, each offsite circuit is capable of supplying required voltage to the interface with the onsite ac power system that will support operation of assumed loads during normal, abnormal and accident conditions.	Analyses of the as-built offsite circuit will be performed to evaluate the capability of each offsite circuit to supply the voltage requirements at the interface with the onsite ac power system.	A report exists and concludes that during steady state operation each as-built offsite circuit is capable of supplying the voltage at the interface with the onsite ac power system that will support operation of assumed loads during normal, abnormal and accident conditions.
4. During steady state operation, each offsite circuit is capable of supplying required frequency to the interface with the onsite ac power system that will support operation of assumed loads during normal, abnormal and accident conditions.	Analyses of the as-built offsite circuit will be performed to evaluate the capability of each offsite circuit to supply the frequency requirements at the interface with the onsite ac power system.	A report exists and concludes that during steady state operation each as-built offsite circuit is capable of supplying the frequency at the interface with onsite ac power system that will support operation of assumed loads during normal, abnormal and accident conditions.
5. The fault current contribution of each offsite circuit is compatible with the interrupting capability of the onsite ac power system short circuit interrupting devices.	Analyses of the as-built offsite circuit will be performed to evaluate the fault current contribution of each offsite circuit at the interface with the onsite ac power system.	A report exists and concludes the short circuit contribution of each as-built offsite circuit at the interface with the onsite ac power system is compatible with the interrupting capability of the onsite fault current interrupting devices

Table 2.6.12-1 Offsite Power System		
Design Commitment	Inspections, Tests, and Analyses	Acceptance Criteria
6. The reactor coolant pumps continue to receive power from either the main generator or the grid for a minimum of 3 seconds following a turbine trip.	Analyses of the as-built offsite power system will be performed to confirm that power will be available to the reactor coolant pumps for a minimum of 3 seconds following a turbine trip when the buses powering the reactor coolant pumps are aligned to either the UATs or the RATs.	A report exists and concludes that voltage at the high-side of the GSU, and the RATs, does not drop more than 0.15 pu from the pre-trip steady-state voltage for a minimum of 3 seconds following a turbine trip when the buses powering the reactor coolant pumps are aligned to either the UATs or the RATs.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None