



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

April 6, 2009

10 CFR 52.79

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

In the Matter of)
Tennessee Valley Authority)

Docket No. 52-014 and 52-015

**BELLEFONTE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION – ELECTRICAL POWER**

- References:
- 1) Letter from Tanya Simms (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 026 Related to SRP Section 08.02 for the Bellefonte Units 3 and 4 Combined License Application, dated May 23, 2008.
 - 2) Letter from Andrea L. Sterdis (TVA) to NRC Document Control Desk, Bellefonte Combined License Application – Response to Request for Additional Information – Electric Power, dated July 9, 2008.

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

A response to each NRC request in the subject letter is addressed in the enclosure which also 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.

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

Executed on this 6th day of April, 2009.

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

DOB
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Enclosure
cc: See Page 3

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cc: (Enclosures)

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

cc: (w/o Enclosure)

B. Anderson, NRC/HQ
M. M. Comar, NRC/HQ
B. Hughes, 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. Register, DOE/PM
L. Reyes, NRC/RII
J. M. Sebrosky, NRC/HQ

Enclosure
TVA letter dated April 6, 2009
RAI Responses

Responses to NRC Request for Additional Information letter No. 026 dated May 23, 2008
(4 pages, including this list)

Subject: Electrical Power in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
08.02-01	July 9, 2008
08.02-02	July 9, 2008
08.02-03	July 9, 2008
08.02-04	July 9, 2008
08.02-05	July 9, 2008
08.02-06	July 9, 2008
08.02-07	July 9, 2008; Supplemented by this letter – see following pages
08.02-08	July 9, 2008

Associated Additional Attachments / Enclosures

Pages Included

None

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 TVA letter dated April 6, 2009
 RAI Responses

NRC Letter Dated: May 23, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 08.02-07

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.

BLN RAI ID: 3269

BLN RESPONSE:

The requested summary of the grid stability analysis results is provided below, including the nominal frequency, allowable frequency fluctuation, maximum frequency decay rate and limiting under frequency values used for the RCPs in the analysis.

DCD Table 1.8-1 item 8.2 Parameter	WEC AC requirements	BLN value assumed
Steady-state load	“normal running values provided as input to grid stability”	“normal running values provided as input to grid stability”
Inrush kVA for motors	56,712 KVA*	88,969 KVA
Nominal voltage	Not provided	1.03 pu (515 KV)
Allowable voltage regulation	0.95-1.05 pu steady state ±20% total for transient	0.95-1.05 pu steady state ±20% total for transient
Nominal frequency	60 Hz	assumed 60 Hz
Allowable frequency fluctuation	±½ Hz indefinite	±½ Hz indefinite
Maximum frequency decay rate	5 Hz/sec	5 Hz/sec

* Based on the inrush of a single 10,000 HP feedwater pump assuming efficiency = 0.95, pf= 0.9, and inrush = 6.5X FLA.

DCD Table 1.8-1 item 8.2 Parameter	WEC acceptance criteria	BLN value calculated
Limiting under frequency value for RCP	≥57.7 Hz	>59 Hz

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For the DBE simulation and the unit tripped simulation, the voltages remained above 0.95 pu. For the 3-phase normally cleared fault the 26-kV voltage recovered to 0.85 pu immediately after the fault cleared in 5 cycles.

For the DBE, it is assumed that the unit experiencing the DBE remains connected to the grid for at least 15 seconds. Loads for normal shutdown or shutdown in the event of a DBE are the same as normal running loads.

The acceptance criteria were obtained from Westinghouse. For a transient, the 26-kV voltage must remain between 0.95 and 1.05 pu or drop no more than 0.15 pu.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR Chapter 8, Subsection 8.2.2 will be revised from:

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 value for RCP have been met.

To read:

Table 8.2-201 confirms 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 value for RCP have been met.

2. COLA Part 2, FSAR Chapter 8, will be revised to include the following new Table 8.2-201 with an LMA of BLN COL 8.2-2:

TABLE 8.2-201
 GRID STABILITY INTERFACE EVALUATION

DCD Table 1.8-1 Item 8.2 Parameter	WEC AC Requirements	BLN Value Assumed
Steady-state load	"normal running values provided as input to grid stability"	"normal running values provided as input to grid stability"
Inrush kVA for motors	56,712 KVA*	88,969 KVA
Nominal voltage	Not provided	1.03 pu (515 KV)
Allowable voltage regulation	0.95-1.05 pu steady state ±20% total for transient	0.95-1.05 pu steady state ±20% total for transient
Nominal frequency	60 Hz	assumed 60 Hz
Allowable frequency fluctuation	±½ Hz indefinite	±½ Hz indefinite
Maximum frequency decay rate	5 Hz/sec	5 Hz/sec

* Based on the inrush of a single 10,000 HP feedwater pump assuming efficiency = 0.95, pf= 0.9, and inrush = 6.5x FLA.

DCD Table 1.8-1 Item 8.2 Parameter	WEC Acceptance Criteria	BLN Value Calculated

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Limiting under frequency value for RCP	≥ 57.7 Hz	> 59 Hz
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ASSOCIATED ATTACHMENTS/ENCLOSURES:

None