



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

January 27, 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 – LONG-TERM ATMOSPHERIC DISPERSION  
ESTIMATES

- References: 1) Letter from Joseph M. Sebrosky (NRC) to Andrea L. Sterdis (TVA), Request for Additional Information Letter No. 076 Related to SRP Section 2.3.5 for the Bellefonte Units 3 and 4 Combined License Application, dated July 16, 2008
- 2) Letter from Andrea L. Sterdis (TVA) to Document Control Desk (NRC), Response to Request for Additional Information – Long-term Atmospheric Dispersion Estimates, dated August 13, 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 letter.

A supplemental response to NRC request 02.03.05-01 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. Please note that this transmittal includes a CD data disk that contains input files necessary for the NRC Staff to perform confirmatory analyses.

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](mailto:tespink@tva.gov).

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

Executed on this 27<sup>th</sup> day of Jan, 2009.

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

DOB5  
NRO

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Enclosure  
cc: See Page 3

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cc: (w/ Enclosures)

J. P. Berger, EDF  
J. M. Sebrosky, NRC/HQ  
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M. C. Kray, NuStart  
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T. Simms, NRC/HQ

Enclosure  
TVA Letter Dated: January 27, 2009  
RAI Responses

Responses to NRC Request for Additional Information letter No. 076 dated July 16, 2008  
(2 pages, including this list)

Subject: Long-Term Atmospheric Dispersion Estimates for Routine Releases in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
02.03.05-01	August 13, 2008; Supplemented by this letter – see following page
02.03.05-02	August 13, 2008

<u>Associated Additional Attachments / Enclosures</u>	<u>Pages Included</u>
Attachment 02.03.05-01A	1

Enclosure  
TVA Letter Dated: January 27, 2009  
RAI Responses

**NRC Letter Dated: July 16, 2008**

**NRC Review of Final Safety Analysis Report**

**NRC RAI NUMBER: 02.03.05-01**

Please discuss how each of the four types of  $\chi/Q$  values provided in FSAR Tables 2.3-323 through 2.3-329 (i.e., no decay, undepleted; no decay, depleted; 2.26 day decay, undepleted; 8.00 day decay, depleted) are used to calculate the dose rates to individuals and the population as presented in FSAR Section 11.3.3.

**BLN RAI ID: 2794**

**BLN RESPONSE:**

The guidance of Regulatory Guide 1.111 and the XOQDOQ computer code (NUREG/CR-2919) were used to determine atmospheric dispersion ( $\chi/Q$ ) and atmospheric deposition (D/Q) values needed for evaluation of maximum individual and population exposure to normal gaseous effluents. Consistent with Regulatory Guide 1.111 guidance for radiological impact evaluations, the removal mechanisms of radioactive decay and deposition were considered. The resulting  $\chi/Q$  values address three conditions of radioactive decay and plume depletion: no decay, undepleted; 2.26 day decay, undepleted; and 8.00 day decay, depleted. These conditions, as well as the case of no decay, depleted, are provided in FSAR Tables 2.3-323 through 2.3-329.

The guidance of Regulatory Guide 1.109 and the GASPAR II computer code (NUREG/CR-4653) were used to evaluate maximum individual and population exposure to normal gaseous effluents. Meteorological data can be provided to GASPAR II through an alternate input file; therefore, an additional meteorological data file was generated for use with GASPAR II. The file generated included three conditions of radiological decay and plume depletion. These conditions included: no decay, undepleted; 2.26 day decay, undepleted; and 8.00 day decay, depleted.

Per the GASPAR II – Technical Reference and User Guide, GASPAR II uses the first condition (no decay, undepleted) for tritium,  $^{14}\text{C}$ , and other long-lived radionuclides that are nondepositing. The second condition (2.26 day decay, undepleted) is used for short-lived radioiodine for inhalation doses and for noble gases for external exposure to the plume. The third condition (8.00 day decay, depleted) is used for the radionuclides other than tritium,  $^{14}\text{C}$ , and noble gases for evaluation of inhalation doses.

The XOQDOQ input files for the combined two years of meteorological data are provided in Attachment 02.03.05-01A.

This response is PLANT-SPECIFIC.

**ASSOCIATED BLN COL APPLICATION REVISIONS:**

No COLA revisions have been identified associated with this response.

**ASSOCIATED ATTACHMENTS/ENCLOSURES:**

Attachment 02.03.05-01A

Enclosure  
TVA Letter Dated: January 27, 2009  
RAI Responses

Attachment 02.03.05-01A  
XOQDOQ input files on CD  
(Based on two years of met data)  
(cover page and CD)

Files included on the CD are:

Input files—

BLN DECAY.DAT

BLN NO DECAY.DAT

BLN PEAKS - DECAY 1.DAT

BLN PEAKS - DECAY 2.DAT

BLN PEAKS - NO DECAY 1.DAT

BLN PEAKS - NO DECAY 2.DAT