



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

August 29, 2008

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 DIFFUSION ESTIMATES**

Reference: Letter from Joseph Sebrosky (NRC) to Andrea L. Sterdis (TVA), Request for
Additional Information Letter No. 095 Related to SRP Section 2.3.5 for the
Bellefonte Units 3 and 4 Combined License Application, dated August 1, 2008

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

A response to each NRC request in the subject letter is addressed in the enclosure which does not
identify any associated changes to 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 29th day of Aug, 2008.

Jack A. Bailey
Vice President, Nuclear Generation Development

Enclosure
cc: See Page 2

*DOBS w/cd. Rom
NRO*

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cc: (Enclosures)

J. P. Berger, EDF
J.M. Sebrosky, NRC/HQ
E. Cummins, Westinghouse
S. P. Frantz, Morgan Lewis
M. W. Gettler, FP&L
R. 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
N. T. Simms, Duke Energy
K. N. Slays, NuStart
G. A. Zinke, NuStart

cc: (w/o Enclosure)

B. C. 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. Reister, DOE/PM
L. Reyes, NRC/RII
T. Simms, NRC/HQ

Enclosure
TVA letter dated August 29, 2008
RAI Responses

Responses to NRC Request for Additional Information letter No.095 dated August 1, 2008
(5 pages, including this list)

Subject: Long-Term Diffusion Estimates in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
02.03.05-03	This letter – see following pages
02.03.05-04	This letter – see following pages
02.03.05-05	This letter – see following pages

<u>Associated Additional Attachments / Enclosures</u>	<u>Pages Included</u>
02.03.05-03A – (Electronic Files on CD)	1 page

NRC Letter Dated: August 1, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 02.03.05-03

Please provide a list of all inputs and assumptions used as inputs to estimate the χ/Q and D/Q values resulting from routine airborne releases. What is the basis for the selected assumptions and inputs? The information provided should be sufficient to allow the NRC staff to perform its own confirmatory calculations. Consider providing the computer input files as part of the response.

BLN RAI ID: 0713

BLN RESPONSE:

Long-term atmospheric dispersion factors have been revised as the result of an updated land use census. The affected FSAR Section 2.3 text and tables were provided in response to NRC RAI No. 02.03.05-02 (see response to BLN-RAI-LTR-076). These FSAR revisions provide the necessary information to allow the NRC to perform its own confirmatory calculation with the exception of site specific terrain features (Ref. 1 through Ref. 5) and plant vent release characteristics. These parameters are provided below.

Site Specific Terrain Features

Direction	Distance to Peak		Distance to Beginning of Incline		Peak Elevation	Peak Elevation Relative to Plant
	(ft)	(m)	(ft)	(m)	(ft)	(m)
S	11721	3573	7814	2382	1380	238
SSW	25786	7860	19535	5954	1400	244
SW	35163	10718	26047	7939	1380	238
WSW	35423	10797	29693	9050	1380	238
W	35423	10797	29693	9050	1380	238
WNW	20316	6192	18884	5756	1060	140
NW	25786	7860	16930	5160	1400	244
NNW	25786	7860	16930	5160	1400	244
N	50270	15322	40112	12226	1640	317
NNE	51833	15799	40112	12226	1500	274
NE	23442	7145	13805	4208	1400	244
ENE	11981	3652	8595	2620	1400	244
E	11070	3374	7423	2263	1400	244
ESE	10158	3096	7033	2144	1400	244
SE	10158	3096	7033	2144	1400	244
SSE	10158	3096	7033	2144	1400	244

The plant elevation was conservatively assumed to be 600 ft (183 m).

The plant vent is a continuous release path with a flow rate of approximately 84,000 cfm (17.28 ft/sec). It is a square shaped vent with sides of approximately 9 ft. The hydraulic diameter of the plant vent is 9 ft (2.74 m).

The computer program, XOQDOQ (NUREG/CR-2919), was used to determine the Bellefonte short term atmospheric dispersion factors. The XOQDOQ input files that were used are provided in Attachment 02.03.05-03A.

Enclosure
TVA letter dated August 29, 2008
RAI Responses

Site specific terrain feature references:

1. United States Department of the Interior Geological Survey, Tennessee Valley Authority Maps and Surveys Branch, Hollywood Quadrangle, 1980
2. United States Department of the Interior Geological Survey, Tennessee Valley Authority Maps and Surveys Branch, Wannville Quadrangle, 1970
3. United States Department of the Interior Geological Survey, Tennessee Valley Authority Maps and Surveys Branch, Henagar Quadrangle, 1983
4. United States Department of the Interior Geological Survey, Tennessee Valley Authority Maps and Surveys Branch, Dutton Quadrangle, 1983
5. United States Department of the Interior Geological Survey, Tennessee Valley Authority Maps and Surveys Branch, Scottsboro Quadrangle, 1982

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

Attachment 02.03.05-03A – (Electronic files on CD)

1 page

Enclosure
TVA letter dated August 29, 2008
RAI Responses

NRC Letter Dated: August 1, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 02.03.05-04

Airborne routine releases were assumed to occur from the center of the Bellefonte site. Please identify the actual planned routine release points and discuss these locations with respect to the center of the site, other structures, and the characteristics of each release mode.

BLN RAI ID: 0714

BLN RESPONSE:

Per Section 11.3.3.3 of the AP1000 Design Control Document (DCD), airborne effluents are normally released through the plant vent or the turbine building vent. The plant vent provides the release path for containment venting releases, auxiliary building ventilation releases, annex building releases, radwaste building releases, and gaseous radwaste system discharge. The turbine building vent provides the release path for the condenser air removal system, gland seal condenser exhaust and turbine building ventilation releases. The AP1000 release locations are shown in Westinghouse DCD Figure 15A-1. The Bellefonte Site Plan, given in FSAR Figure 1.1-202, shows the location of Units 3 and 4 relative to the center of the site. The characteristics of each release mode used in evaluation of routine gaseous effluent releases are provided in Attachment 02.03.05-03A of this letter.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

Enclosure
TVA letter dated August 29, 2008
RAI Responses

NRC Letter Dated: August 1, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 02.03.05-05

With regard to calculation of the atmospheric dispersion factors (χ/Q values) for routine airborne releases, page 2.3-34 of the FSAR states that terrain recirculation was considered consistent with Regulatory Guide 1.111. Please revise the FSAR to provide a more detailed discussion of the basis for and how terrain was factored into the calculation of the χ/Q and D/Q values.

BLN RAI ID: 0715

BLN RESPONSE:

Long-term atmospheric dispersion factors have been revised as the result of an updated land use census. The affected FSAR Section 2.3 text and tables were provided in response to NRC RAI No. 02.03.05-02 (see response to BLN-RAI-LTR-076). These FSAR text revisions provide a discussion of how terrain was factored into the calculation of the Bellefonte χ/Q and D/Q values. Adjustments for recirculation and effective stack height are addressed using XOQDOQ default open terrain correction factors (see NUREG/CR-2919) and site specific terrain features, respectively. Site specific terrain features used in the XOQDOQ input are provided in Attachment RAI 02.03.05-03A of this letter.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

Attachment 02.03.05-03A
TVA letter dated August 29, 2008
RAI Responses

Attachment 02.03.05-03A

(1page)

XOQDOQ Input Files

(Electronic Files on CD)

XOQDOQ input files:

- BLN PEAKS - NO DECAY2.DAT (8KB)
- BLN DECAY.DAT (8 KB)
- BLN NO DECAY.DAT (8 KB)
- BLN PEAKS - DECAY 1.DAT (8KB)
- BLN PEAKS - DECAY 2. DAT ((8 KB)
- BLN PEAKS - NO DACAY 2.DAT (8 KB)