



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

May 29, 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 – INTERFACE ITEMS**

Reference: Letter from Joseph M. Sebrosky (NRC) to Andrea L. Sterdis (TVA), Request for
Additional Information Letter No. 156 Related to SRP Section 01.08 for the
Bellefonte Units 3 and 4 Combined License Application, dated April 17, 2009.

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 the 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 29th day of MAY, 2009.

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

Enclosure
cc: See Page 2

DOBS
NRC

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cc: (w/ Enclosures)

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Responses to NRC Request for Additional Information letter No. 156 dated April 17, 2009
(10 pages, including this list)

Subject: Interface items in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
01-14	This letter – see following pages

<u>Associated Additional Attachments / Enclosures</u>	<u>Pages Included</u>
None	

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NRC Letter Dated: April 17, 2009

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 01-14

The applicant incorporated by reference Section 1.8 of the DCD. This section of the DCD identifies certain interfaces with the standard design that have to be addressed in accordance with 10 CFR 52.47(a)(1)(vii) (Note: following the update to Part 52, this provision has changed to 52.47(a)(25)) As required by 52.79(d)(2), the COL applicant must demonstrate how these interface items have been met. BLN 3 and 4 does not explicitly identify how these interface items have been met.

BLN RAI ID: 3309

BLN RESPONSE:

Explicit identification of the FSAR location of information addressing the interface items identified in Section 1.8 of the DCD is provided in new FSAR Table 1.8-203, as shown in the Application Revisions section below. Some clarifying remarks are provided below for a few items that have been addressed by the DCD since the interface item listing was created. During the COL review to develop the new FSAR table, it was also determined that additional information is necessary for a few items.

Item 1.1 – During review for this request, Westinghouse determined that this item has been previously completed within the DCD. Thus, Westinghouse is expected to remove this item in a future revision to the DCD. As such, Note 1 indicates that this item is not further addressed in the COLA.

Item 8.2 – This information is not currently in Revision 1 of the FSAR, but was committed to be added as shown in the April 6, 2009, supplemental response to BLN-RAI-LTR-026.

Item 9.4 – This information is not currently in Revision 1 of the FSAR, but will be included as shown in Application Revision section below.

Item 11.1 - This information is not currently in Revision 1 of the FSAR, but will be included as shown in Application Revision section below. Note that there are no liquid waste systems outside the AP1000 design scope and thus, there are no site specific parameters. There is one site specific interface; liquid releases are discharged into the Guntersville Reservoir.

Item 11.2 - This information is not currently in Revision 1 of the FSAR, but will be included as shown in Application Revision section below. Note that there are no gaseous waste systems outside the AP1000 design scope and thus, there are no site specific parameters or interfaces.

Item 18.4 – This item was partially addressed by Westinghouse in DCD Subsections 18.2.6 and 18.8.5.

Item 18.5 – This item was partially addressed by Westinghouse in DCD Subsections 18.2.6 and 18.8.5.

The information shown below will be incorporated into a future amendment of the COLA.

This response is PLANT-SPECIFIC. However, the COL Application Revisions include both PLANT-SPECIFIC and STANDARD changes.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR Chapter 1, Section 1.8, will be revised to include the following new paragraph at the end of the section with a left margin annotation (LMA) of BLN SUP 1.8-3:

DCD Table 1.8-1 presents interface items for the AP1000. FSAR section(s) addressing these interface items are tabulated in Table 1.8-203.

2. COLA Part 2, FSAR Chapter 1, Section 1.8, will be revised to include the following new table with an LMA of BLN SUP 1.8-3:

TABLE 1.8-203
SUMMARY OF FSAR DISCUSSIONS OF AP1000 PLANT INTERFACES

Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
1.1	Post accident Radio-Iodine sampling capability per NUREG 0737	Requirement of AP1000	Combined License applicant program	(2)
2.1	Envelope of AP1000 plant site related parameters	Site Interface	Site specific parameters	Table 2.0-201
2.2	External missiles from man-made hazards and accidents	Site Interface	Site specific parameters	2.2.2.2, 2.2.3.1, 3.5
2.3	Maximum loads from man-made hazards and accidents	Site Interface	Site specific parameters	Table 2.0-201
2.4	Limiting meteorological parameters (χ/Q) for design basis accidents and for routine releases and other extreme meteorological conditions for the design of systems and components exposed to the environment.	Site Interface	Site specific parameters	Table 2.0-201
2.5	Tornado and operating basis wind loadings	Site Interface	Site specific parameters	Table 2.0-201
2.6	External missiles generated by natural phenomena	Site Interface	Site specific parameters	Table 2.0-201
2.7	Snow, ice and rain loads	Site Interface	Site specific parameters	2.3.1.2
2.8	Ambient air temperatures	Site Interface	Site specific parameters	Table 2.0-201
2.9	Onsite meteorological measurement program	Requirement of AP1000	Combined License applicant program	2.3.3
2.10	Flood and ground water elevations	Site Interface	Site specific parameters	Table 2.0-201

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Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
2.11	Hydrostatic loads on systems, components and structures	Site Interface	Site specific parameters	Table 2.0-201
2.12	Seismic parameters peak ground acceleration response spectra shear wave velocity	Site Interface	Site specific parameters	Table 2.0-201
2.13	Required bearing capacity of foundation materials	Site Interface	Site specific parameters	Table 2.0-201
3.1	Deleted	N/A	N/A	N/A
3.2	Operating procedures to minimize water hammer	Requirement of AP1000	Combined License applicant procedure	10.3.2.2.1, 10.4.7.2.1
3.3	Site seismic sensor location and "trigger" value	Requirement of AP1000	Onsite implementation	3.7.4.2.1, DCD 3.7.4.2
3.4	Depth of overburden	Requirement of AP1000	Onsite implementation	3.8.5.1, 2.5.4
3.5	Depth of embedment	Requirement of AP1000	Onsite implementation	3.8.5.1, 2.5.4
3.6	Specific depth of waterproofing	Requirement of AP1000	Onsite implementation	2.5.4.1, DCD 3.4.1.1.1
3.7	Foundation Settlement Monitoring	Requirement of AP1000	Combined License applicant coordination	2.5.4.10.4
3.8	Lateral earth pressure loads	Not an Interface	N/A	N/A
3.9	Preoperational piping vibration test parameters	Not an Interface	N/A	N/A
3.10	Inservice Inspection requirements and locations	Requirement of AP1000	Combined License applicant program	3.9.6, 5.2.4, 6.6
3.11	Maintenance of preservice and reference test data for inservice testing of pumps and valves	Requirement of AP1000	Combined License applicant program	3.9.6
3.12	Earthquake response procedures	Requirement of AP1000	Combined License applicant program	3.7.4.4
5.1	Steam Generator Tube Surveillance Requirements	Requirement of AP1000	Combined License applicant program	5.4.2.5

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Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
6.1	Inservice Inspection requirements for the containment	Requirement of AP1000	Combined License applicant program	6.6
6.2	Off site environmental conditions assumed for Main Control Room and control support area habitability design	AP1000 Interface	Site specific parameter	2.2.3, 6.4
7.1	Listing of all design criteria applied to the design of the I&C systems	Not an Interface	N/A	N/A
7.2	Power required for site service water instrumentation	NNS and Not an Interface	N/A	N/A
7.3	Other provisions for site service water instrumentation	NNS and Not an Interface	N/A	N/A
8.1	Listing of design criteria applied to the design of the offsite power system	NNS	Combined License applicant coordination	8.1.4.3
8.2	Offsite ac requirements: - Steady-state load; - Inrush kVA for motors; - Nominal voltage; - Allowable voltage regulation; - Nominal frequency; - Allowable frequency fluctuation; - Maximum frequency decay rate; - Limiting under frequency value for RCP	NNS	Combined License applicant coordination	8.2.2
8.3	Offsite transmission system analysis: - Loss of AP1000 or largest unit; - Voltage operating range; - Transient stability must be maintained and the RCP bus voltage must remain above the voltage required to maintain the flow assumed in Chapter 15 analyses for a minimum of three (3) seconds following a turbine trip.; - The protective devices controlling the switchyard breakers are set with consideration given to preserving the plant grid connection following a turbine trip.	NNS	Combined License applicant analysis	8.2.2
8.4	Listing of design criteria applied to the design of onsite ac power systems	NNS and Not an Interface	N/A	N/A
8.5	Onsite ac requirements	NNS and Not an Interface	N/A	N/A

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Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
8.6	Diesel generator room coordination	NNS and Not an Interface	N/A	N/A
8.7	Listing of design criteria applied to the design of onsite dc power systems	Not an Interface	N/A	N/A
8.8	Provisions of dc power systems to accommodate the site service water system	NNS and Not an Interface	N/A	N/A
9.1	Listing of design criteria applied to the design of portions of the site service water within AP1000	NNS and Not an Interface	N/A	N/A
9.2	Integrated heat load to site service water system	NNS and Not an Interface	N/A	N/A
9.3	Plant cooling water systems parameters	NNS and Not an Interface	N/A	N/A
9.4	Plant makeup water quality limits	NNS	Site specific parameter	9.2.11
9.5	Requirements for location and arrangement of raw and sanitary water systems	NNS	Site implementation	9.2.5, 9.2.11
9.6	Ventilation requirements for diesel-generator room	NNS and Not an Interface	N/A	N/A
9.7	Requirements to satisfy fire protection program	AP1000 Interface	Combined License applicant program	9.5.1
11.1	Expected release rates of radioactive material from the Liquid Waste System including: - Location of release points - Effluent temperature - Effluent flow rate - Size and shape of flow orifices	Site Interface	Site specific parameters	11.2
11.2	Expected release rates of radioactive materials from the Gaseous Waste System including: - Location of release points - Height above grade - Height relative to adjacent buildings - Effluent temperature - Effluent flow rate - Effluent velocity - Size and shape of flow orifices	Site Interface	Site specific parameters	11.3

Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
11.3	Expected release rates of radioactive material from the Solid Waste System including: - Location of release points - Material types - Material qualities - Size and shape of material containers	Site Interface	Site specific parameters	11.4.6
11.4	Requirements for offsite sampling and monitoring of effluent concentrations	AP1000 Interface	Combined License applicant program	11.5.3, 11.5.7
12.1	Identification of miscellaneous radioactive sources	AP1000 Interface	Combined License applicant program	12.2.1
13.1	Features that may affect plans for coping with emergencies as specified in 10 CFR 50, Appendix O	AP1000 Interface	Combined License applicant program	13.3
13.2	Physical Security Plan consistent with AP1000 plant	AP1000 Interface	Combined License applicant program	13.6
14.1	Identification of special features to be considered in development of the initial test program	Requirement of AP1000	Combined License applicant program	14
14.2	Maintenance of preoperational test data and inservice inspection baseline data	AP1000 Interface	Combined License applicant program	14
16.1	Administrative requirements associated with reliability information maintenance	AP1000 Interface	Combined License applicant program	16
16.2	Administrative requirements associated with the Technical Specifications	Requirement of AP1000	Combined License applicant implementation	16
16.3	Site and operator related information associated with the Reliability Assurance Program (D-RAP)	Requirement of AP1000	Combined License applicant program	16.2
18.1	Operating staff consistent with Human Factors evaluations	AP1000 Interface	Combined License applicant program	18.6
18.2	Operator training consistent with Human Factors evaluations	AP1000 Interface	Combined License applicant program	18.8, 18.10
18.3	Operating Procedures consistent with Human Factors evaluations	AP1000 Interface	Combined License applicant program	18.8, 18.10

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Item No.	Interface	Interface Type	Matching Interface Item	Section ⁽¹⁾ or Subsection
18.4	Final coordination and integration of human system interface areas within a specific AP1000 consistent with Human Factors evaluations	AP1000 Interface	Combined License applicant program	18.2, DCD 18.2, DCD 18.8
18.5	Final coordination and integration of Combined License applicant facilities with those of a specific AP1000 consistent with Human Factors evaluations	AP1000 Interface	Combined License applicant program	18.2, DCD 18.2, DCD 18.8

Note 1 – This table supplements DCD Table 1.8-1 by providing additional information in the Section or Subsection column.

Note 2 – Westinghouse has determined that this item has been fully addressed by the DCD. Thus, item 1.1 is not addressed by the COLA.

3. COLA Part 2, FSAR Chapter 9, Section 9.2.11, will be revised from (as previously revised in response to BLN-RAI-LTR-144):

The RWS provides raw strained river water from the Guntersville Reservoir for makeup to the circulating water system (CWS) natural draft cooling tower basins and reservoir filtered water to the Standby Service Water mechanical draft cooling tower basins and to the demineralized water treatment system (DTS). The RWS also provides an alternate supply of filtered reservoir...

To read:

The RWS provides raw strained river water from the Guntersville Reservoir for makeup to the circulating water system (CWS) natural draft cooling tower basins and reservoir treated water to the Standby Service Water mechanical draft cooling tower basins and to the demineralized water treatment system (DTS). The RWS also provides an alternate supply of treated reservoir...

4. COLA Part 2, FSAR Chapter 9, Section 9.2.11.1.2.1 will be revised from (as previously revised in response to BLN-RAI-LTR-144):

The ancillary RWS pumps provide a continuous supply of filtered river water...

To read:

The ancillary RWS pumps provide a continuous supply of treated river water...

5. COLA Part 2, FSAR Chapter 9, Section 9.2.11.1.2.1 will be revised from (as previously revised in response to BLN-RAI-LTR-144):

- Piping to provide an alternate makeup supply of filtered river water to the FPS primary and secondary fire water storage tanks.

To read:

- Piping to provide an alternate makeup supply of treated river water to the FPS primary and secondary fire water storage tanks.

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5. COLA Part 2, FSAR Chapter 9, Section 9.2.11.2 will be revised from (as previously revised in response to BLN-RAI-LTR-144):

The flow path for the functions described in the power generation design basis is from the Guntersville Reservoir, through trash rakes, intake screens and into the basins where the water is available for distribution. The RWS pumps discharge through strainers into a common distribution header for each unit. The ancillary RWS pumps discharge into a common header to a multi-unit media filter to a distribution header for each unit. A bypass is provided for the multi-media filter.

The RWS provides a piping connection to the municipal water supply for filling and makeup to the primary and secondary fire water storage tanks. A normally closed connection provides a backup supply for filling the fire water storage tanks with raw filtered river water by the ancillary RWS pumps.

To read:

The flow path for the functions described in the power generation design basis is from the Guntersville Reservoir, through trash rakes, intake screens and into the basins where the water is available for distribution. The RWS pumps discharge through strainers into a common distribution header for each unit. The ancillary RWS pumps discharge into a common header to a multi-unit media filter through an ultraviolet (UV)/oxidation subsystem and activated charcoal bed to a distribution header for each unit. A bypass is provided for the multi-media filter, UV/oxidation subsystem, and activated charcoal bed.

The RWS water is treated, as necessary, to provide source water of suitable quality to the Demineralized Water Treatment System and the Standby Service Water System. This water has suspended solids less than 1000 ppb and a pH between 5.8 to 7.5. Additionally, the RWS provides strained water for makeup to the Circulating Water System.

The RWS provides a piping connection to the municipal water supply for filling and makeup to the primary and secondary fire water storage tanks. A normally closed connection provides a backup supply for filling the fire water storage tanks with raw filtered river water by the ancillary RWS pumps.

6. COLA Part 2, FSAR Chapter 9, Section 9.2.11.2.1 for Granular Media Filters will be revised from (as previously revised in response to BLN-RAI-LTR-144):

A Multi-unit media filter is located upstream....

To read:

Multiple granular media filter units are located upstream....

7. COLA Part 2, FSAR Chapter 9, Section 9.2.11.2.1 after Granular Media Filters add the following new component descriptions:

Ultraviolet (UV)/Oxidation Subsystem

In-line ultraviolet light sources are located downstream of the granular media filters where low turbidity conditions exist to achieve highly effective UV irradiation of bacteria. This UV light treatment is augmented with the use of hydrogen peroxide to further assist in elimination of bacteriological material, and also to eradicate any larval stage Zebra mussel clams and other biota which may be present in the raw water.

Activated Charcoal Beds

Activated charcoal filters are located downstream of the UV/oxidation subsystem in order to remove any organic compounds from the raw water. In addition, activated charcoal reduces the levels of residual peroxide. The charcoal filters are periodically backwashed and the wash water discharged to the reservoir.

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8. COLA Part 2, FSAR Chapter 9, Section 9.2, Figure 9.2-201 will be revised to show the UV/Oxidation subsystem and the activated charcoal filters. (Actual figure will be provided with future COLA amendment.)

9. COLA Part 2, FSAR Chapter 11, Section 11.2, will be revised to add the following subsection with LMA of BLN SUP 11.2-2:

11.2.3 Radioactive Releases

Add the following new paragraph at the end of DCD Subsection 11.2.3:

The only liquid effluent site interface parameter outside of the Westinghouse scope is the release point to the Gunterville Reservoir.

10. COLA Part 2, FSAR Chapter 11, Section 11.3, will be revised to add the following subsection with LMA of STD SUP 11.3-2:

11.3.3 Radioactive Releases

Add the following new paragraph at the end of DCD Subsection 11.3.3:

There are no gaseous effluent site interface parameters outside of the Westinghouse scope.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None