



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

September 22, 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

**BELLEVILLE COMBINED LICENSE APPLICATION – RESPONSE TO REQUEST FOR
ADDITIONAL INFORMATION – RADIATION PROTECTION**

Reference: Letter from Ravindra G. Joshi, (NRC) to Andrea L. Sterdis (TVA), Request for
Additional Information Letter No. 109 Related to SRP Section 12.01, 12.03-12.04,
and 12.05 for the Belleville Units 3 and 4 Combined License Application, dated
August 07, 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 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 22nd day of Sep, 2008.

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

Enclosure
cc: See Page 2

DO85
NRD

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cc: (w/Enclosure)

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Enclosure
TVA letter dated September 22, 2008
RAI Response

Responses to NRC Request for Additional Information letter No. 109 dated August 07, 2008
(17 pages, including this list)

Subject: Radiation Protection in the Final Safety Analysis Report

<u>RAI Number</u>	<u>Date of TVA Response</u>
12.01-01	This letter – see following pages
12.03-12.04-01	This letter – see following pages
12.03-12.04-02	This letter – see following pages
12.03-12.04-03	This letter – see following pages
12.03-12.04-04	This letter – see following pages
12.03-12.04-05	This letter – see following pages
12.05-01	This letter – see following pages
12.05-02	This letter – see following pages

Associated Additional Attachments / Enclosures

None

Pages Included

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TVA letter dated September 22, 2008
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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.01-01

FSAR Section 12.1.2.4.3, STD SUP 12.1-1 states that a video record of the equipment layout in areas where the radiation fields are expected to be high following operations may be used to assist in ALARA planning and to facilitate decommissioning.

The operational Radiation Protection Program implementation does not state when the appropriate ALARA program procedures as described in the proposed License Conditions (Part 10 of the Bellefonte Nuclear Plant, Units 3 & 4 COL application) will be implemented. Also, according to Table 13.4-201, Operational Programs Required by NRC regulations, FSAR Section 12.1, ALARA is not specifically required by any milestone. The functional elements of an ALARA program, if met, would demonstrate compliance with 10 CFR 20.1101 and 10 CFR 19.12.

Accordingly, please update FSAR Section 12.1, STD SUP 12.1-1, to clarify TVA's commitment to the final ALARA program implementation. When, for example, will TVA implement ALARA procedures for planning prior to receipt of radioactive material or fuel?

BLN RAI ID: 1099

BLN RESPONSE:

ALARA practices are not viewed as separate from the plant's Radiation Protection procedures. ALARA practices are inherent in a sound Radiation Protection Program. 10 CFR 20.1101 does not dictate the development of an ALARA Program. 10 CFR 20.1101 (b) states that the ALARA concept should be incorporated the development of procedural and engineering controls.

The ALARA focused procedures are developed in conjunction with the Radiation Protection Program (RPP) and thus follows the RPP milestones for implementation found in Table 13.4-201.

Text clarifying the applicant's ALARA procedure implementation will be provided in Section 12.1 and Table 13.4-201 in a future revision of the COLA. The NRC is currently reviewing the latest version of NEI 07-08. The COLA changes resulting from the approved NEI 07-08 will be provided after approval of NEI 07-08 by the NRC.

The clarification requested by this RAI is provided in FSAR text that pertains to STD COL 12.1-1 and not STD SUP 12.1-1, as specified in this RAI. STD SUP 12.1-1 provides supplemental information that is not pertinent to the requested ALARA clarification.

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR. Chapter 12, Section 12.1, first paragraph will be revised from:

This section incorporates by reference NEI 07-08, Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA), Revision 0, which is currently under review by the NRC staff. See Table 1.6-201.

Enclosure
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To read:

This section incorporates by reference NEI 07-08, Generic FSAR Template Guidance for Ensuring That Occupational Radiation Exposures Are as Low as Is Reasonably Achievable (ALARA), Revision 2, which is currently under review by the NRC staff. See Table 1.6-201. ALARA practices are developed in a phased milestone approach as part of the procedures necessary to support the Radiation Protection Program. Table 13.4-201 describes the major milestones for ALARA procedures development and implementation.

2. COLA Part 2, FSAR. Chapter 13, Table 13.4-201, Item 10 will be revised from:

Item	Program Title	Program Source (Required by)	FSAR Section	Milestone	Implementation	Requirement
10.	Radiation Protection Program	10 CFR 20.1101	12.5	<ol style="list-style-type: none"> 1. Prior to initial receipt of by-product, source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18 2. Prior to receipt of fuel onsite 3. Prior to initial fuel load 4. Prior to first shipment of radioactive waste 		License Condition

To read:

Item	Program Title	Program Source (Required by)	FSAR Section	Milestone	Implementation	Requirement
10.	Radiation Protection Program (including ALARA practices)	10 CFR 20.1101	12.1 12.5	<ol style="list-style-type: none"> 1. Prior to initial receipt of by-product, source, or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18 2. Prior to receipt of fuel onsite 3. Prior to initial fuel load 4. Prior to first shipment of radioactive waste 		License Condition

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-01

The NRC staff reviewed STD COL information item 12.3-3, dealing with groundwater monitoring program, using the text added in Appendix 12AA:

A groundwater monitoring program will be established with the intent to meet the regulations described in 10 CFR 20.1406 which are described in Appendix 12AA.5.4.13.

Until issuance of Regulatory Guide 4.21 (June 2008), there was no specific regulatory guidance that described an acceptable method for meeting the regulation. The certified design for the AP1000 established a COL information item, 12.3-3, to ensure that as a minimum each site would develop operational programs to monitor groundwater for the presence of radionuclides that could be migrating from systems structures and components containing radioactive material.

The groundwater monitoring program as described in the Appendix 12AA includes implementation considerations, but the program lacks a description of the key components of the program such as types and periodicity of routine samples, threshold activity to be detected, actions to be taken upon detection, and quality assurance practices to be used to ensure a reasonable assurance of prompt identification of leakage into the groundwater.

Describe the ground water monitoring program in sufficient detail to demonstrate compliance with 10 CFR 20.1406 or consider the guidance provided by RG 4.21 and incorporate into the application.

BLN RAI ID: 1100

BLN RESPONSE:

As noted in this RAI, until the issuance of Regulatory Guide 4.21 (June 2008), there was no specific regulatory guidance that described an acceptable method for meeting 10 CFR 20.1406. The Nuclear Energy Institute (NEI) has been developing generic FSAR templates to assist in expediting NRC review and issuance of the Combined License (COL). NEI is developing NEI 08-08, which is ongoing as of the date of this response, to provide an acceptable format and information that may be used by a COL applicant to meet 10 CFR 20.1406. A description of the ground water monitoring program is planned to be discussed in NEI 08-08. The applicant plans to adopt NEI 08-08, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," to describe the ground water monitoring program and demonstrate compliance with 10 CFR 20.1406. The applicant will revise the application to adopt NEI 08-08 in a future revision of the COLA.

The listing of site areas to be specifically considered in the groundwater monitoring program is revised to clarify that the identified directions are plant directions.

It is recognized that NEI 07-03, which FSAR Appendix 12AA incorporates by reference, has been revised since submittal of the application. The latest revision of NEI 07-03 adds a subsection to 12.5.4 that requires renumbering of subsections in this appendix to the application that is not reflected in the associated application revision below. The NRC is currently reviewing the latest version of NEI 07-03. The COLA changes resulting from the approved NEI 07-03 will be provided after approval of NEI 07-03 by the NRC.

This response is expected to be STANDARD for the S-COLAs.

Enclosure
TVA letter dated September 22, 2008
RAI Response

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR. Chapter 12, Appendix 12AA.5.4.13 will be revised from:

STD COL 12.3-3 A groundwater monitoring program beyond the normal radioactive effluent monitoring program is developed. If and as necessary to support this groundwater monitoring program, design features will be installed during the plant construction process. Areas of the site to be specifically considered in this groundwater monitoring program are:

- West of the auxiliary building in the area of the fuel transfer canal.
- West and south of the radwaste building.
- East of the auxiliary building rail bay and the radwaste building truck doors.

STD SUP 12.5-1 Groundwater monitoring program implementation considerations include:

- Impacts on the foundation support if ground water or leaked liquids are extracted,
- Re-evaluation of the location and sampling frequency if contaminant is detected,
- Site specific models of contaminant migration, if contaminants are detected,
- Methods to isolate and collect liquid radioactive contaminants escaping to the subsurface to prevent abnormal release to ground water

To read:

STD COL 12.3-3 A groundwater monitoring program beyond the normal radioactive effluent monitoring program is developed. If and as necessary to support this groundwater monitoring program, design features will be installed during the plant construction process. Areas of the site to be specifically considered in this groundwater monitoring program are (all directions based on plant standard):

- West of the auxiliary building in the area of the fuel transfer canal.
- West and south of the radwaste building.
- East of the auxiliary building rail bay and the radwaste building truck doors.

This subsection adopts NEI 08-08 (Reference 201), which is currently under review by the NRC staff, for the Groundwater Monitoring Program description.

2. COLA Part 2, FSAR Chapter 12, Appendix 12AA, add the following after Subsection 12AA.5.4.14:

Add the following reference to the NEI 07-03 REFERENCES.

201. NEI 08-08, Generic FSAR Template Guidance for Life Cycle Minimization of Contamination, Revision 0.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-02

The NRC has previously submitted RAIs requesting that each DCD applicant provide a general description of how each of the main design objectives contained in Regulatory Guide 4.21 will be met. Each DCD applicant was also requested to address the objectives that are more operational or procedural in nature by providing COL information items in the appropriate sections of the DCD. A detailed description of how each of these COL information items will be resolved should be included in the appropriate sections of the COL FSAR where the COL applies, with a listing identifying each of these COL information items included in Section 12.3 of the COL FSAR. For example, an acceptable description of a groundwater monitoring program should include implementation considerations and a description of the key components of the program such as types and periodicity of routine samples to be taken, threshold activities to be detected, actions to be taken upon detection of leakage into the groundwater, and a description of quality assurance practices to be used to ensure reasonable assurance of prompt identification of leakage into the groundwater.

Using the guidance provided in Regulatory Guide 4.21, "Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning" (June 2008), or using alternate acceptable guidance, provide a description of all the operational programs and COL information items necessary to demonstrate how TVA meets the requirements of 10 CFR 20.1406.

BLN RAI ID: 1164

BLN RESPONSE:

As noted in RAI 12.03-12.04-01, until the issuance of Regulatory Guide 4.21 (June 2008), there was no specific regulatory guidance that described an acceptable method for meeting 10 CFR 20.1406. The Nuclear Energy Institute (NEI) has been developing generic FSAR templates to assist in expediting NRC review and issuance of the Combined License (COL). NEI is developing NEI 08-08, which is ongoing as of the date of this response, to provide an acceptable format and information that may be used by a COL applicant to meet 10 CFR 20.1406. The applicant plans to adopt NEI 08-08, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," to demonstrate compliance with 10 CFR 20.1406. The applicant will revise the application to adopt NEI 08-08 in a future revision of the COLA.

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR, Chapter 12, Appendix 12AA, will be revised to add the following after Subsection 12.5.4.7:

Add the following text after the last bullet of NEI 07-03 Subsection 12.5.4.8.

This subsection adopts NEI 08-08 (Reference 201), which is currently under review by the NRC staff, for discussion of compliance with 10 CFR 20.1406.

2. COLA Part 2, FSAR Chapter 12, Appendix 12AA, Reference 201 will be added per response to RAI 12.03-12.04-01, this letter.

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ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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TVA letter dated September 22, 2008
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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-03

Currently there is insufficient detail to allow for a determination of whether STD COL information item 12.3-4 is satisfied by the information submitted by the applicant.

Appendix 12AA.5.4.14 describes in general terms the procedures that are (will be) established to document operational events that are of interest for decommissioning, beyond those required by 10 CFR 50.75. The intent of these records is to enable efficient review of historical occurrences and operational events when planning for the decommissioning of the facility. The records should identify any remediation of leaks that have the potential to contaminate groundwater. The procedures that govern retention of these records, and the records themselves, should specify the retention period needed to assure availability when they may be required (e.g., life of facility plus 30 years). There is insufficient detail addressing these records.

This item should be included in and describe the operational and design COL information items that fully meet the recordkeeping objectives of Regulatory Guide 4.21, Revision 0, "Minimization of Contamination and Radioactive Waste Generation: Life Cycle Planning," or describe an equivalent practice to meet the guidance.

BLN RAI ID: 1165

BLN RESPONSE:

Decommissioning recordkeeping practices will be developed, documented, and implemented sufficiently to meet the objectives defined in Regulatory Guide 4.21. The Nuclear Energy Institute (NEI) has been developing generic FSAR templates to assist in expediting NRC review and issuance of the Combined License (COL). NEI is developing NEI 08-08, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," which is ongoing as of the date of this response, to provide an acceptable format and information that may be used by a COL applicant to meet 10 CFR 20.1406. A description of records for decommissioning is planned to be discussed in NEI 08-08. The applicant plans to adopt NEI 08-08, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination," to demonstrate compliance with the recordkeeping requirements of 10 CFR 20.1406.

The applicant will revise the application to adopt NEI 08-08 in a future revision of the COLA.

It is recognized that NEI 07-03, which FSAR Appendix 12AA incorporates by reference, has been revised since submittal of the application. The latest revision of NEI 07-03 adds a subsection to 12.5.4 that requires renumbering of subsections in this appendix to the application that is not reflected in the associated application revision below. The NRC is currently reviewing the latest version of NEI 07-03. The COLA changes resulting from the approved NEI 07-03 will be provided after approval of NEI 07-03 by the NRC.

This response is expected to be STANDARD for the S-COLAs.

Enclosure
TVA letter dated September 22, 2008
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ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR. Chapter 12, Section 12AA.5.4.14 will be revised from:

Procedures are established to document the operational events that are deemed of interest for decommissioning, beyond that required by 10 CFR 50.75. These documented operational events assist in developing a historical assessment of the nuclear facilities, thereby reducing time, effort, and hazards to personnel during decommissioning planning. This documentation will include identification of the remediation of any leaks, which have the potential to contaminate groundwater.

To read:

This subsection adopts NEI 08-08 (Reference 201), which is currently under review by the NRC staff, for discussion of recordkeeping practices important to decommissioning.

2. COLA Part 2, FSAR Chapter 12, Appendix 12AA, Reference 201 will be added per response to RAI 12.03-12.04-01, this letter.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

Enclosure
TVA letter dated September 22, 2008
RAI Response

NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-04

The NRC staff reviewed supplemental information item BLN SUP 12.4-1, regarding dose to construction workers, in the new Subsection 12.4.1.9 (subsections 12.4.1.9.1 through 12.4.1.9.5). The information provided in FSAR section 12.4.1.9.1-4 was not sufficient for the staff to validate and verify the estimated doses for Unit 4 construction workers. Without this information the staff can not verify that the application meets the acceptance criteria in SRP 12.3-4 and complies with the dose limits in 10 CFR 20.1301 and 1302. Information provided to the staff should include the information necessary to reproduce the calculations, or reference where the information was obtained and where it is available to the staff.

The applicant discussed, as part of the dose assessment, the site layout, radiation sources, construction worker dose estimates, compliance with dose regulations, and collective doses to BLN Unit 4 workers.

Please provide the specific points of reference necessary for the staff to reproduce the calculations.

BLN RAI ID: 1101

BLN RESPONSE:

The construction worker doses are calculated based on onsite radiation sources from the operation of Bellefonte Unit 3 while Unit 4 is under construction. Radiation sources include plume exposure, ground exposure, and inhalation. Evaluation locations considered are the nearest location along the Unit 3 protected area fence in each direction as well as the nearest point of the Unit 4 shield building construction area. It is assumed that a temporary fence is installed between the two units after one becomes operational. Refer to FSAR Figure 1.1-202 for the site layout. The XOQDOQ and GASPARI codes are used in the determination of construction worker doses. XOQDOQ uses joint frequency distribution tables based on meteorological data for the year beginning April 1, 2006 and ending March 31, 2007. The release location, the plant vent, is modeled as a point source and releases are assumed to be ground level releases. An assumed shield building cross-sectional area of 1500 m² and height of 55.7 m are used in calculation of building wake effects. No terrain correction was applied because the construction area around Units 3 and 4 is relatively flat. Distances to the construction worker evaluation locations and resulting atmospheric dispersion factors are provided in Table 12.03-12.04-4A (below).

The source terms used by GASPARI to evaluate the construction worker doses are the expected annual average releases of airborne radionuclides as provided in Table 11.3-3 of the AP1000 DCD. Because the ingestions pathways are not included in the analysis, the parameters for the GASPARI input record type 3.0 do not affect the construction worker doses and default site specific fractions can be used.

The calculated plume, ground, and inhalation doses for a typical worker at the Unit 4 shield building were summed and adjusted based on the ratio of hours the workers would spend at the construction site to the total number of hours in a year. Assuming the workers are at the construction site 40 hours per week, 52 weeks per year, this ratio is 2080/8760. The collective dose to BLN Unit 4 workers was calculated by multiplying the annual dose to a worker at the Unit 4 construction area (0.54 mrem TEDE) by the number of Unit 4 workers (2100).

TABLE 12.03-12.04-04A
CONSTRUCTION WORKER χ/Q AND D/Q VALUES

Location ⁽¹⁾	Sector	Distance		χ/Q	χ/Q	χ/Q	D/Q
		(miles)	(meters)	No Decay Undepleted	2.26 Day Decay Undepleted	8.00 Day Decay Depleted	
Unit 3 Fence Line	S	0.08	128	1.80E-04	1.80E-04	1.70E-04	2.60E-07
Unit 3 Fence Line	SSW	0.11	178	1.70E-04	1.70E-04	1.60E-04	2.50E-07
Unit 3 Fence Line	SW	0.18	292	8.40E-05	8.40E-05	7.90E-05	1.30E-07
Unit 3 Fence Line	WSW	0.15	238	6.80E-05	6.70E-05	6.30E-05	5.50E-08
Unit 3 Fence Line	W	0.12	193	5.90E-05	5.90E-05	5.50E-05	3.00E-08
Unit 3 Fence Line	WNW	0.11	184	4.90E-05	4.80E-05	4.60E-05	3.20E-08
Unit 3 Fence Line	NW	0.11	184	6.10E-05	6.00E-05	5.70E-05	4.70E-08
Unit 3 Fence Line	NNW	0.12	187	7.90E-05	7.90E-05	7.40E-05	6.70E-08
Unit 3 Fence Line	N	0.11	178	1.40E-04	1.40E-04	1.30E-04	1.20E-07
Unit 3 Fence Line	NNE	0.11	169	3.20E-04	3.20E-04	3.00E-04	2.70E-07
Unit 3 Fence Line	NE	0.11	169	1.90E-04	1.90E-04	1.80E-04	2.00E-07
Unit 3 Fence Line	ENE	0.09	149	9.60E-05	9.60E-05	9.00E-05	1.20E-07
Unit 3 Fence Line	E	0.07	119	9.80E-05	9.80E-05	9.10E-05	1.30E-07
Unit 3 Fence Line	ESE	0.07	116	7.30E-05	7.30E-05	6.80E-05	1.00E-07
Unit 3 Fence Line	SE	0.07	116	8.00E-05	8.00E-05	7.50E-05	1.10E-07
Unit 3 Fence Line	SSE	0.07	119	1.30E-04	1.30E-04	1.20E-04	1.70E-07
Unit 4 Shield Building	SE	0.14	232	2.20E-05	2.20E-05	2.10E-05	4.40E-08

Note:

1. The χ/Q and D/Q values were calculated at the nearest point of the Unit 3 fence line to the Unit 3 plant vent for each sector and the nearest point of the Unit 4 shield building to the Unit 3 plant vent.

This response is PLANT-SPECIFIC.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

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ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.03-12.04-05

Additional standards such as ANSI N42.17A-1989, as it relates to the accuracy and overall performance of portable survey instruments, and ANSI N323A-1997, as it relates to the calibration and maintenance of portable radiation survey instruments, should be provided.

The applicant describes Area and Airborne Radioactivity Monitoring Instrumentation in FSAR section 12.3.4 and also includes Section 14.2.9.4.27 Portable Personnel Monitors and Radiation Survey Instruments in the FSAR (after DCD Subsection 14.2.9.4.15) as a response to the action item (COL Action Item 14.4-5). The action item lists portable personnel monitors and radiation survey instruments as an item to be considered for testing that may be required of structures and systems that are outside the scope of the design certification.

Portable personnel monitor and radiation survey instrument testing verifies that the devices operate in accordance with their intended function in support of the radiation protection program as described in Chapter 12. The applicant states as a prerequisite that the monitors, instruments and certified test sources are on site. The applicant also states the general test method and acceptance criteria for the monitors and instruments would be source checking and testing in accordance with the manufacturers' recommendations. The NRC staff's position is that the manufacturers' recommendations are not sufficient to meet performance standards. Rather, industry standards are the current industry basis for maintaining and calibrating such instrumentation.

Please provide information addressing the applicant's use of standards such as ANSI N42.17A-1989, as it relates to the accuracy and overall performance of portable survey instruments, and ANSI N323A-1997, as it relates to the calibration and maintenance of portable radiation survey instruments.

BLN RAI ID: 1102

BLN RESPONSE:

The first paragraph of FSAR Subsection 14.2.9.4.27 refers to Chapter 12 for additional information concerning portable personnel monitors and radiation survey instruments as they relate to the Radiation Protection Program. The Radiation Protection Program, as it is described in FSAR Appendix 12AA, states that guidance from Regulatory Guide 8.6 is followed. Conformance with Regulatory Guide 8.6 is described in FSAR Appendix 1AA which states that instrument calibration program is based upon criteria in ANSI N323-1978 (R1993) "Radiation Protection Instrumentation and Calibration." Therefore, the FSAR currently addresses the use of industry standards as they relate to accuracy, performance, calibration and maintenance of portable survey instruments.

The FSAR will be revised to include maintenance and calibration of survey instruments and to update the version of ANSI standard in a future revision of the COLA.

This response is expected to be STANDARD for the S-COLAs.

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TVA letter dated September 22, 2008
RAI Response

ASSOCIATED BLN COL APPLICATION REVISIONS:

1. COLA Part 2, FSAR. Chapter 14, Section 14.2.9.4.27, third paragraph will be revised from:
The portable personnel monitors and radiation survey instruments are source checked and tested in accordance with the manufacturers' recommendations.

To read:

The portable personnel monitors and radiation survey instruments are source checked, tested, maintained, and calibrated in accordance with the manufacturers' recommendations. The portable monitors and instruments tests include:

- a. Proper function of the monitors and instruments to respond to radiation is verified, as required.
- b. Proper operation of instrumentation controls, battery, and alarms, if applicable.

2. COLA Part 2, FSAR. Chapter 1, Appendix IAA, Regulatory Guide 8.6 will be revised from:
Reg. Guide 8.6, Rev. 0, 5/73 – Standard Test Procedure for Geiger-Muller Counters

General	Exception	Instrument calibration program is based upon criteria in ANSI N323-1978 (R1993) "Radiation Protection Instrumentation and Calibration."
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To read:

Reg. Guide 8.6, Rev. 0, 5/73 – Standard Test Procedure for Geiger-Muller Counters

General	Exception	Instrument calibration program is based upon criteria in ANSI N323A-1997(with 2004 Correction Sheet) "Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments."
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ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

Enclosure
TVA letter dated September 22, 2008
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NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.05-01

The applicant has not provided sufficient information to allow for a determination of whether its ALARA program sets an appropriate threshold for determining significant exposure.

The applicant indicates that this STD COL item 12.5-1 is addressed in Appendix 12AA of the COL application. This appendix incorporates by reference NEI 07-03, Revision 3, "Generic FSAR Template Guidance for Radiation Protection Program Description," which is currently under review by the NRC staff. The applicant took several exceptions to the text of the reference NEI 07-03, Revision 3. The NRC staff reviewed STD COL information item 12.5-1 dealing with radiation protection program description, using the text added in Appendix 12AA.

BLN RAI ID: 1166

BLN RESPONSE:

The version of NEI 07-03 incorporated in FSAR Appendix 12 is Revision 3 (October 2007). The current version of NEI 07-03 is Revision 6 (August 2008). NEI 07-03 used bracketed text in Revision 3 to denote information for which the COL applicant is responsible. The bracketed information requiring the applicant to provide a definition of "significant exposure" has been removed in the latest revision of NEI 07-03. Therefore, the applicant will remove the text added to NEI 07-03, Rev. 03 pertaining to significant exposures and incorporate Revision 6 template discussion concerning significant exposures.

The applicant will revise the application, as necessary, to conform the FSAR to the approved version of NEI 07-03 in a future revision of the COLA. The NRC is currently reviewing the latest revision of NEI 07-03. The COLA changes resulting from the approved version of NEI 07-03 will be provided after approval by the NRC.

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None

Enclosure
TVA letter dated September 22, 2008
RAI Response

NRC Letter Dated: August 7, 2008

NRC Review of Final Safety Analysis Report

NRC RAI NUMBER: 12.05-02

The applicant has not described the radiation protection procedures to be implemented at each phase of the operational program implementation in accordance with Table 13.4-201. Appendix 12AA lists the milestones but does not provide sufficient detail to allow for a determination of whether adequate procedures will be implemented prior to each milestone. Please describe the program aspects to be implemented prior to each milestone.

The applicant has not addressed this operational program directly; however Appendix 12AA "Radiation Protection Program Description," discusses items related to this operational program. In this appendix the applicant incorporates by reference NEI 07-03, "Generic FSAR Template Guidance for Radiation Protection Program Description, Revision 3," which is currently under review by the NRC staff. (See Table 1.6-201). The applicant indicates that Table 13.4-201 provides milestones for radiation protection program implementation. The description of the operational program and proposed implementation milestone for the radiation protection program is reviewed in accordance with 10 CFR 20.1101. Its implementation is required by a license condition. The applicant has not described the radiation protection procedures/programs to be implemented at each phase of the operational program implementation in accordance with Table 13.4-201. Please provide such a description.

BLN RAI ID: 1167

BLN RESPONSE:

The radiation protection procedures/programs are to be implemented in a milestone approach following those shown in Table 13.4-201. Strict wording that denotes exact phases of implementation is deemed to unnecessarily restrict plant managers and decision makers. As noted in this RAI, a radiation program description is presented in Appendix 12AA. The description of this program is commensurate and consistent with Part 20 regulations and applicable regulatory guidance. Several individual programs that comprise the Radiation Protection Program are found in FSAR Subsection 13.1.1.2.5.

The applicant has denoted in FSAR Section 13.2 that experience and training of plant personnel meets the applicable NRC regulations, and Technical Specification 5.3.1 requires that "Each member of the unit staff shall meet or exceed the minimum qualifications of Regulatory Guide 1.8, Revision 3, 2000," with one exception to allow for cold license training. Therefore, the Functional Manager in Charge of Radiation Protection will meet the necessary expertise and experience requirements to determine a specific implementation timeline of individual radiation protection programs and ensure that this implementation will meet plant radiation protection and ALARA objectives. Radiation protection responsibilities of the functional manager in charge of radiation protection include the responsibility to establish, implement, and enforce the radiation protection program (see FSAR Subsection 13.1.2.1.1.5).

This response is expected to be STANDARD for the S-COLAs.

ASSOCIATED BLN COL APPLICATION REVISIONS:

No COLA revisions have been identified associated with this response.

Enclosure
TVA letter dated September 22, 2008
RAI Response

ASSOCIATED ATTACHMENTS/ENCLOSURES:

None