## PMBelCOL PEmails

**From:** Ravindra Joshi
**Sent:** Thursday, August 07, 2008 4:15 PM
**To:** andrea sterdis; bob Hirman; Eddie R Grant; Hastings, Peter S; Kim Slays; Ray, Phillip M; rgrumbir@gmail.com
**Cc:** BelCol Resource
**Subject:** FW: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
**Attachments:** BEL-RAI-LTR-109.pdf

Here is the attachment
Ravi

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**From:** Ravindra Joshi
**Sent:** Thursday, August 07, 2008 4:14 PM
**To:** 'andrea sterdis'; bob Hirman; Eddie R Grant; Hastings, Peter S; Kim Slays; Ray, Phillip M; rgrumbir@gmail.com
**Cc:** BelCol Resource
**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION

To All,
Attached is RAI letter No.109 related to SRP Sections 12.01, 12.03-12.04, and 12.05 for the Bellefonte Units 3 and 4. The ADAMS Accession number is ML082200591.

Ravindra G. Joshi
Project Manager
NRO/DNRL/NWE1
US NRC
301-415-6191

**Hearing Identifier:** Bellefonte_COL_Public_EX
**Email Number:** 772

**Mail Envelope Properties** (CEEA97CC21430049B821E684512F6E5E979DA85334)

**Subject:** FW: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
**Sent Date:** 8/7/2008 4:15:15 PM
**Received Date:** 8/7/2008 4:15:17 PM
**From:** Ravindra Joshi

**Created By:** Ravindra.Joshi@nrc.gov

**Recipients:**
"BelCol Resource" <BelCol.Resource@nrc.gov>
Tracking Status: None
"andrea sterdis" <alsterdis@tva.gov>
Tracking Status: None
"bob Hirman" <bobhirman@live.com>
Tracking Status: None
"Eddie R Grant" <erg-xl@cox.net>
Tracking Status: None
"Hastings, Peter S" <pshastings@duke-energy.com>
Tracking Status: None
"Kim Slays" <Kslays@duke-energy.com>
Tracking Status: None
"Ray, Phillip M" <pmray@tva.gov>
Tracking Status: None
"rgrumbir@gmail.com" <rgrumbir@gmail.com>
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

| **Files** | **Size** | **Date & Time** |
|---|---|---|
| MESSAGE | 688 | 8/7/2008 4:15:17 PM |
| BEL-RAI-LTR-109.pdf | 180169 | |

**Options**
**Priority:** Standard
**Return Notification:** No
**Reply Requested:** No
**Sensitivity:** Normal
**Expiration Date:**
**Recipients Received:**

## BellefonteRAIsPEm Resource

**From:** Ravindra Joshi
**Sent:** Thursday, August 07, 2008 3:28 PM
**To:** BellefonteRAIsPEm Resource
**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
**Attachments:** BEL-RAI-LTR-109.doc

**Hearing Identifier:** Bellefonte_COL_RAI_Public
**Email Number:** 93

**Mail Envelope Properties** (CEEA97CC21430049B821E684512F6E5E979DA85273)

**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
**Sent Date:** 8/7/2008 3:27:39 PM
**Received Date:** 8/7/2008 3:28:06 PM
**From:** Ravindra Joshi

**Created By:** Ravindra.Joshi@nrc.gov

**Recipients:**
"BellefonteRAIsPEm Resource" <BellefonteRAIsPEm.Resource@nrc.gov>
Tracking Status: None

**Post Office:** HQCLSTR01.nrc.gov

| **Files** | **Size** | **Date & Time** |
|---|---|---|
| MESSAGE | 3 | 8/7/2008 3:28:06 PM |
| BEL-RAI-LTR-109.doc | 67066 | |

**Options**
**Priority:** Standard
**Return Notification:** No
**Reply Requested:** No
**Sensitivity:** Normal
**Expiration Date:**
**Recipients Received:**

August 7, 2008

Ms. Andrea L. Sterdis
Manager, Nuclear Licensing & Industry Affairs
Nuclear Generation Development & Construction
Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 109 RELATED TO SRP SECTIONS 12.01, 12.03-12.04, and 12.05 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION

Dear Ms. Sterdis:

By letter dated October 30, 2007, as supplemented by letters dated November 2, 2007, January 8, 2008 and January 14, 2008, Tennessee Valley Authority (TVA) submitted its application to the U. S. Nuclear Regulatory Commission (NRC) for a combined license (COL) for two AP1000 advance passive pressurized water reactors pursuant to 10 CFR Part 52. The NRC staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within 45 days of the date of this letter. If changes are needed to the final safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, you may contact me at 301-415-6191 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Ravindra G. Joshi, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015

Enclosure:
Request for Additional Information

If you have any questions or comments concerning this matter, you may contact me at 301-415-6191 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/**RA**/

Ravindra G. Joshi, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015
eRAI Tracking No. 612, 613, 863, 865, 866, and 868

Enclosure:
Request for Additional Information

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NRO-002

| OFFICE | CHPB | NWE1/PM | OGC | NWE1/L-PM |
|---|---|---|---|---|
| NAME | TFrye * | RJoshi* | AHodgdon* | JSebrosky* |
| DATE | 7/23/08 | 7/28/08 | 8/4/08 | 8/5/08 |

*Approval captured electronically in the electronic RAI system.

**OFFICIAL RECORD COPY**

**Bellefonte Units 3 and 4**
**Tennessee Valley Authority**
**Docket No. 52-014 and 52-015**
**SRP Sections: 12.01, 12.03-12.04, and 12.05**
**Application Section: Chapter 12**

**QUESTIONS from Health Physics Branch (CHPB)**

12.01-1

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?

12.03-12.04-1

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.

12.03-12.04-2

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.

12.03-12.04-3

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.

12.03-12.04-4

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 20.1301and 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.

12.03-12.04-5

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 radiaton survey instruments.

12.05-1

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.

However, the statement from 12AA that “Significant exposures are described by the functional manager in charge of radiation protection procedures,” does not provide sufficient guidance related to maintaining ALARA as described in NEI 07-03,"Generic FSAR Template Guidance for Radiation Protection Program Description" to which the applicant has committed in section 1.6 of the FSAR. The applicant provides no site specific information regarding what constitutes a significant exposure (e.g., 1500 mrem cumulative exposure for maintenance or refueling tasks).

Please provide site specific information regarding what constitutes a significant exposure.

12.05-2

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.