

## **BellefonteRAIsPEm Resource**

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**From:** Ravindra Joshi  
**Sent:** Thursday, August 07, 2008 3:53 PM  
**To:** BellefonteRAIsPEm Resource  
**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 112 RELATED TO SRP SECTION 19 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION  
**Attachments:** BEL-RAI-LTR-112.doc

**Hearing Identifier:** Bellefonte\_COL\_RAI\_Public  
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**Subject:** REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 112 RELATED TO  
SRP SECTION 19 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION  
**Sent Date:** 8/7/2008 3:52:45 PM  
**Received Date:** 8/7/2008 3:52:46 PM  
**From:** Ravindra Joshi

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

**Recipients:**  
"BellefonteRAIsPEm Resource" <BellefonteRAIsPEm.Resource@nrc.gov>  
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**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. 112 RELATED TO  
SRP SECTION 19 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 Joseph 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. 815

Enclosure:  
 Request for Additional Information

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NRO-002

OFFICE	SPLA/BC	NWE1/PM	OGC	NWE1/L-PM
NAME	LMrowca *	RJoshi*	AHodgdon*	JSebrosky*
DATE	6/11/08	6/12/08	7/7/08	7/7/08

\*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 Section: 19- Probabilistic Risk Assessment and Severe Accident Evaluation**  
**Application Section: FSAR 19**

**QUESTIONS from PRA Licensing, Operations Support and Maintenance Branch 1 (SPLA)**

19-4

The Staff Requirements Memorandum on SECY-93-087, "Policy, Technical, and Licensing Issues Pertaining to Evolutionary and Advanced Light-Water Reactor (ALWR) Designs," states:

PRA insights will be used to support a margins-type assessment of seismic events. A PRA-based seismic margins analysis will consider sequence-level High Confidence, Low Probability of Failures (HCLPFs) and fragilities for all sequences leading to core damage or containment failures up to approximately one and two-thirds the ground motion acceleration of the Design Basis SSE.

The interim staff guidance on [Seismic Issues Associated with High Frequency Ground Motion](#) defines ground motion response spectra (GMRS) as site-specific. For this reason, the generic hard-rock high-frequency (HRHF) ground motion spectra provided in Figures 5.0-3 and 5.0-4 (added to DCD Revision 16, Tier 1) are considered design basis spectra for hard rock sites.

Chapter 2 of the BLN FSAR describes in detail the development and results of the GMRS for the BLN Units 3 & 4 Site. The BLN FSAR Section 2.5.2.5 indicates that the BLN Units 3 & 4 Site is a hard rock site.

BLN FSAR Table 2.0-201, "Comparison of AP1000 DCD Site Parameters and Bellefonte Nuclear Plant Units 3&4 Site Characteristics," states the following:

High frequency exceedances of the horizontal ground motion response spectra has been evaluated by Westinghouse and these exceedances are within the seismic design margin of the AP1000 and will not adversely affect the systems, structures or components of the plant.

However, Revision 1 of APP-GW-GLR-134 (TR-134) added a new paragraph to Section 3.10 of the AP1000 DCD. This paragraph originated with APP-GW-GLN-144 (TR-144), issued in December 2007. This paragraph states the following:

The AP1000 plant is based on the Certified Seismic Design Response Spectra (CSDRS) defined in subsection 3.7.1.1. The CSDRS are based on Regulatory Guide 1.60 design response spectra with an increase in the 25 hertz region. The Ground Motion Response Spectra (GMRS) for some Central and Eastern United States rock sites show higher amplitude at high frequency than the CSDRS. Evaluations for high frequency exceedance at AP1000 plant rock sites have been performed as described in Appendix 3I. It is the conclusion of these evaluations that AP1000 plant systems, structures, and components are qualified for the high frequency seismic response based on the CSDRS with the **exception of potential high frequency sensitive components** [emphasis added] (APP-GW-GLN-144, Reference 5). Specific models of components are not identified as part of the AP1000 certified design and are evaluated for high frequency sensitivity as part of the equipment qualification. Appendix 3I provides the criteria for addressing potential high frequency sensitive components for plant locations where there is CSDRS exceedance in the high frequency region.

Given the above, the staff requests the following additional information relative to seismic qualification of SSCs, and relative to the Seismic Margins Analysis incorporated by reference into Section 19.55 of the BLN FSAR from Section 19.55 of the AP1000 DCD:

- Please reconcile the statement from Table 2.0-201 of the BLN FSAR with the relatively recent addition to the AP1000 DCD stated above.
- Given that the BLN GMRS exceed the AP1000 CSDRS for a range of higher frequencies, please demonstrate that the plant will have adequate margin as described in the staff requirements memorandum for SECY-93-087.