

BellefonteRAIsPEm Resource

From: Brian Hughes
Sent: Thursday, August 07, 2008 2:30 PM
To: BellefonteRAIsPEm Resource
Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 110 RELATED TO SRP SECTION 03.07.01 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
Attachments: BEL-RAI-LTR-110.doc

Brian Hughes
Project Manager
NRO/DNRL/NWE1
US NRC
301-415-6582

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Subject: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 110 RELATED TO SRP SECTION 03.07.01 FOR THE BELLEFONTE UNITS 3 and 4 COMBINED LICENSE APPLICATION
Sent Date: 8/7/2008 2:30:18 PM
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From: Brian Hughes

Created By: Brian.Hughes@nrc.gov

Recipients:
"BellefonteRAIsPEm Resource" <BellefonteRAIsPEm.Resource@nrc.gov>
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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. 110 RELATED TO
SRP SECTION 03.07.01 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 30 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 301-415-6582 or you may contact Joseph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/RA/

Brian Hughes, 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 301-415-6582 or you may contact Joesph Sebrosky, the lead project manager for the Bellefonte combined license at 301-415-1132.

Sincerely,

/RA/

Brian Hughes, Project Manager
AP1000 Projects Branch 1
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-014
52-015
eRAI Tracking No. 691

Enclosure:
Request for Additional Information

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NRO-002

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NAME	PPatel*	BHughes*	PMoulding*	JSebrosky*
DATE	7/1/08	8/7/08	7/18/08	6/30/08

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information

8/7/2008

Bellefonte Units 3 and 4 TVA

Docket No. 52-014 and 52-015

SRP Section: 03.07.01 - Seismic Design Parameters
Application Section: 3.7 Seismic Design

QUESTIONS from Structural Engineering Branch 1 (SEB1)

03.07.01-1
3.7 SEISMIC DESIGN

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Add Subsection 3.7.1.1.1 as follows: (BLN SUP 3.7-3)

“3.7.1.1.1 Design Ground Motion Response Spectra

Figures 3.7-201 and 3.7-202 show a comparison of the horizontal and vertical site-specific ground motion response spectra (GMRS) to the certified seismic design response spectra (CSDRS), respectively. The horizontal and vertical response spectra were developed at the top of a hypothetical outcrop of competent material at the elevation of the AP1000 basemat as described in Section 2.5.2.4.4. Bedrock at 588.6 ft. (NAVD 88), the elevation of the AP1000 basemat, has a shear wave velocity that exceeds 9,200 feet per second as described in Section 2.5.4.7; thus no site response analysis was required to develop the GMRS.

As shown on Figure 3.7-201, the horizontal GMRS exceeds the CSDRS at frequencies of about 15 to 80 hertz. Peak ground acceleration at 100 hertz is about 0.24g. As shown on Figure 3.7-202, the vertical GMRS exceeds the CSDRS at frequencies of about 20 to 85 hertz.

The high frequency exceedances described above are within the seismic design margin of the AP1000, and will not adversely affect the systems, structures, or components of the plant.”

RAI: In the last sentence of BLN SUP 3.7-3, the applicant states: “The high frequency exceedances described above are within the seismic design margin of the AP1000, and will not adversely affect the systems, structures, or components of the plant.” However, the applicant has not provided the technical basis for this conclusion. The staff requests the applicant to submit a detailed description of the technical basis for this statement, including supporting quantitative response comparisons.

03.07.01-2

3.7.2.12 Methods for Seismic Analysis of Dams

Add the following text to the end of DCD Subsection 3.7.2.12: (BLN COL 3.7-1)

“The evaluation of existing and new dams whose failure could affect the site interface flood level specified in DCD Subsection 2.4.1.2, is included in Subsection 2.4.4.”

RAI: The staff requires clarification about the seismic classification of dams and the analysis methods and acceptance criteria that have been applied in the “evaluation of existing and new dams whose failure could affect the site interface flood level specified in DCD Subsection 2.4.1.2,.....” The staff requests the applicant to provide the following information for BLN COL 3.7-1:

- (a) Are there any Seismic Category I dams associated with the Bellefonte site? If so, describe the analysis methods and acceptance criteria that have been applied to confirm they do not collapse under the GMRS.
- (b) What organization has jurisdictional responsibility for the dams whose failure in an earthquake could affect the site flood level? Is there an established seismic design basis for these dams? If so, please describe it.
- (c) In estimating the maximum site flood level, including seismic effects on these dams, have all dams been assumed to fail under the effects of the site GMRS? If not, describe in detail the technical basis for making determinations of complete failure, partial failure, and no failure under the effects of the site GMRS.

03.07.01-3

3.7.2.8.1 Annex Building

Add the following text to the end of DCD Subsection 3.7.2.8.1: (STD SUP 3.7-4)

“The annex building is designed so that it will not collapse and damage the safety related auxiliary and shield building.”

RAI: In STD SUP 3.7-4, the RCOL applicant states: “The annex building is designed so that it will not collapse and damage the safety related auxiliary and shield building.” The staff notes that

- (1) AP1000 DCD Rev. 15, Section 2.7.2.8.1 states: “The annex building is classified as seismic Category II.”
- (2) AP1000 DCD Rev. 16, Section 2.7.2.8.1 states: “The portion of the annex building adjacent to the nuclear island is classified as seismic Category II.”
- (3) AP1000 DCD Rev. 15 and 16, Section 3.7.2, 3rd paragraph, states: “Seismic Category II building structures are designed for the safe shutdown earthquake using the same methods and design allowables as are used for seismic Category I structures.”

The staff requests the applicant to clarify why this supplemental statement has been added, and specifically identify

- (a) the Bellefonte-specific Seismic Category of the annex building;
- (b) the seismic analysis methods and acceptance criteria that have been applied; and
- (c) the technical justification for any deviations from “...the same methods and design allowables as are used for seismic Category I structures.”