

Greg Gibson
Senior Vice President, Regulatory Affairs

750 East Pratt Street, Suite 1600
Baltimore, Maryland 21202



10 CFR 50.4
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August 5, 2011

UN#11-219

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI No. 284, Vibratory Ground Motion

- References:
- 1) Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI No. 284 RGS2 5295" email dated January 21, 2011
 - 2) UniStar Nuclear Energy Letter UN#11-179, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 284, Vibratory Ground Motion, dated June 3, 2011

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated January 21, 2011 (Reference 1). This RAI addresses Vibratory Ground Motion, as discussed in Section 2.5.2 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant, Unit 3 Combined License Application (COLA), Revision 7.

Reference 2 provided a schedule for the response date as August 5, 2011. The enclosure provides our response to RAI No. 284, Question 02.05.02-22.

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As a result of this response, UniStar will revise the COLA to reflect the impact to the Probabilistic Seismic Hazard Analysis and Ground Motion Response Spectra. UniStar Nuclear Energy requires additional time to finalize the COLA markups to incorporate the RAI 284 impacts. A schedule for the submission of COLA markups will be provided by August 30, 2011.

Our response does not include any new regulatory commitments. This letter does not contain any sensitive or proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Wayne A. Massie at (410) 470-5503.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 5, 2011



Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 284, Question 02.05.02-22, Vibratory Ground Motion, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Charles Casto, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

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Enclosure

**Response to NRC Request for Additional Information
RAI No. 284, Question 02.05.02-22, Vibratory Ground Motion
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 284

Question 02.05.02-22

In response to Question 2.5.2-5, which asks what impact the New Madrid Seismic Zone (NMSZ) may have on the CCNPP seismic hazard curves, UniStar stated that the NMSZ is 1200 km away from the site. UniStar did not include the NMSZ in its PSHA study because the EPRI (2004) ground motion prediction equations are defined only up to a distance of 1000km and the Modified Mercalli Intensity (MMI) value of IV at the CCNPP site during the 1811 NMSZ earthquake did not include damage to buildings. Even though the NMSZ is quite distant from the site, a preliminary confirmatory analysis by the NRC staff indicates that the NMSZ may contribute significantly to the 1-Hz hazard. Please provide and compare the 1-Hz hard rock hazard curves for the NMSZ, the Charleston source, and the total hazard of the CCNPP Unit 3 site.

This RAI is a potential Open Item.

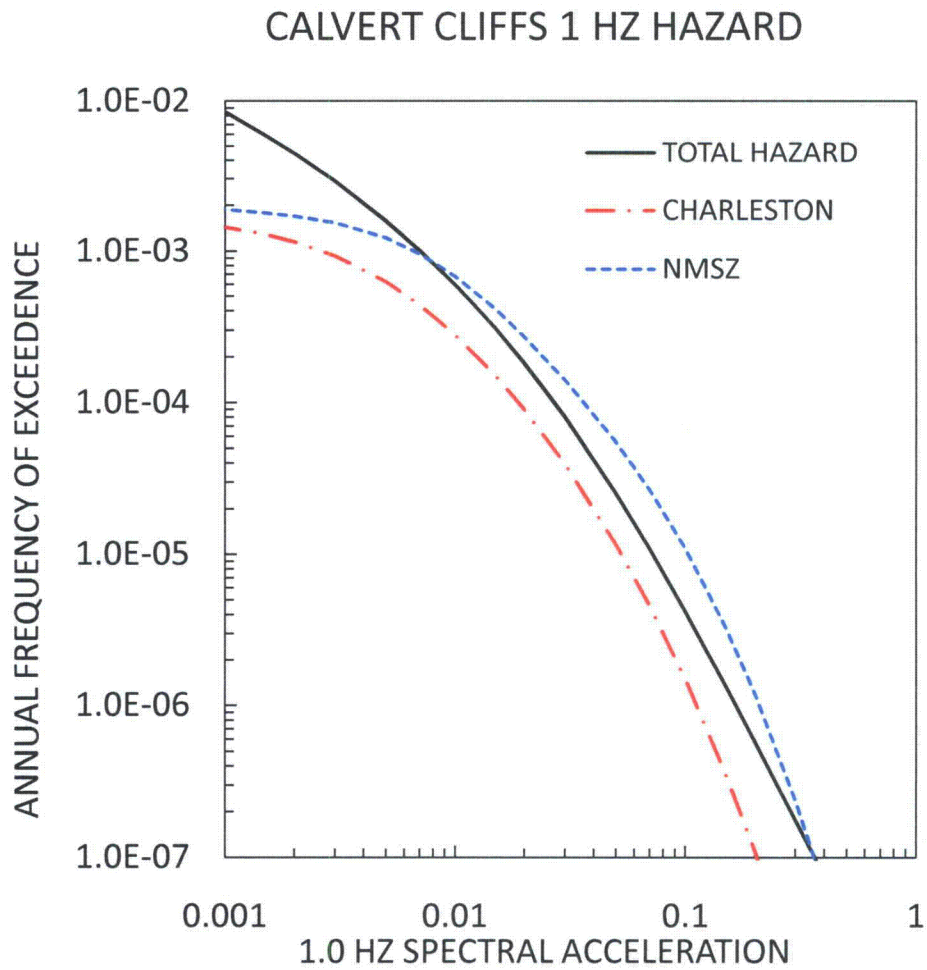
Response

Figure 1 provides and compares the 1.0 Hz hard rock hazard curves for the New Madrid Seismic Source Zone (NMSZ), the Charleston source, and the total hazard of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 site. It is concluded that the NMSZ has a contribution to the hazard at low frequencies. UniStar is evaluating the cumulative impacts of the NMSZ on the CCNPP Unit 3 FSAR and will provide an update to any impacted COLA content once those impacts are identified.

COLA Impact

The FSAR will be updated to incorporate the NMSZ into the CCNPP Unit 3 Probabilistic Seismic Hazard Analysis and its impact to the Ground Motion Response Spectra, as well as any collateral COLA effects. A schedule for submittal of these COLA markups will be provided by August 30, 2011.

Figure 1: 1-Hz Hard Rock Hazard Curves for the New Madrid Seismic Source Zone (NMSZ), the Charleston Source, and the Total Hazard of the CCNPP Unit 3 Site.



NOTE: The Total Hazard Curve shown above does not include the contribution of the New Madrid Seismic Zone (NMSZ).