

## ArevaEPRDCPEm Resource

---

**From:** BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]  
**Sent:** Wednesday, June 16, 2010 3:27 PM  
**To:** Tesfaye, Getachew  
**Cc:** ROMINE Judy (AREVA NP INC); CORNELL Veronica (EXT); VAN NOY Mark (EXT); PATTON Jeff (AREVA NP INC); COLEMAN Sue H (AREVA NP INC); SANDERS Harris I (AREVA NP INC); WILLIFORD Dennis C (AREVA NP INC)  
**Subject:** DRAFT Response to U.S. EPR Design Certification Application RAI No. 283, FSAR Ch. 3, Supplement 6  
**Attachments:** RAI 283 Supplement 6 Response US EPR DC - DRAFT.pdf

Getachew,

On May 27, 2010, AREVA provided a schedule for the final response for RAI 283, Supplement 6, as June 30, 2010. To support interactions with the staff on this response, a draft is attached for your review. Let me know if the staff has questions, or if this response can be transmitted as final. Please note that this response should be together with Draft RAI 190 Supplement 6 as 283 Supplement 6 points to it.

Thanks,

Martin (Marty) C. Bryan  
U.S. EPR Design Certification Licensing Manager  
AREVA NP Inc.  
Tel: (434) 832-3016  
702 561-3528 cell  
[Martin.Bryan.ext@areva.com](mailto:Martin.Bryan.ext@areva.com)

**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 1566

**Mail Envelope Properties** (BC417D9255991046A37DD56CF597DB71068D11C8)

**Subject:** DRAFT Response to U.S. EPR Design Certification Application RAI No. 283,  
FSAR Ch. 3, Supplement 6  
**Sent Date:** 6/16/2010 3:26:47 PM  
**Received Date:** 6/16/2010 3:27:22 PM  
**From:** BRYAN Martin (EXT)

**Created By:** Martin.Bryan.ext@areva.com

**Recipients:**

"ROMINE Judy (AREVA NP INC)" <Judy.Romine@areva.com>  
Tracking Status: None  
"CORNELL Veronica (EXT)" <Veronica.Cornell.ext@areva.com>  
Tracking Status: None  
"VAN NOY Mark (EXT)" <Mark.Vannoy.ext@areva.com>  
Tracking Status: None  
"PATTON Jeff (AREVA NP INC)" <Jeff.Patton@areva.com>  
Tracking Status: None  
"COLEMAN Sue H (AREVA NP INC)" <Sue.Coleman@areva.com>  
Tracking Status: None  
"SANDERS Harris I (AREVA NP INC)" <Harris.Sanders@areva.com>  
Tracking Status: None  
"WILLIFORD Dennis C (AREVA NP INC)" <Dennis.Williford@areva.com>  
Tracking Status: None  
"Tesfaye, Getachew" <Getachew.Tesfaye@nrc.gov>  
Tracking Status: None

**Post Office:** AUSLYNCMX02.adom.ad.corp

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	646	6/16/2010 3:27:22 PM
RAI 283 Supplement 6 Response US EPR DC - DRAFT.pdf		411949

**Options**

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

**Response to**

**Request for Additional Information No. 283, Supplement 6**

**9/02/2009**

**U.S. EPR Standard Design Certification**

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 03.03.02 - Tornado Loads**

**SRP Section: 03.08.01 - Concrete Containment**

**SRP Section: 03.08.03 - Concrete and Steel Internal Structures of Steel or  
Concrete Containments**

**Application Section: FSAR Ch 3**

**QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)**

**Question 03.08.01-37:****Follow-up to RAI Question Number 3.8.1-2**

The applicant's response provided a description of the sliding and overturning stability analysis carried out for the Reactor Building Internal Structures (RBIS). This analysis indicates that the seismic lateral loads and overturning moments are transferred from the RBIS to the Nuclear Island common basemat through bearing pressure on the haunch walls and on the basemat.

The following additional information is needed to resolve this RAI:

1. The applicant states that the seismic loadings were applied to a finite element model "as static equivalent loadings (i.e., zero period acceleration or ZPA)." Clarify how the accelerations were distributed throughout the RBIS model (e.g., was the ZPA value at each degree of freedom from the seismic analysis utilized and applied to the corresponding node in the RBIS equivalent static analysis?)
2. The applicant mentions that the "U.S. EPR is designed to envelope a total of twelve different soil conditions, which result in twelve different sets of ZPAs. The ZPA values applicable to the RBIS were reviewed, and a total of four sets were determined to be potentially controlling for RBIS stability analysis." Explain the basis for selecting these representative soil cases and corresponding ZPAs.
3. The analysis provided by the applicant is essentially a stability analysis (i.e., overturning does not occur with an appropriate factor of safety). The staff notes that this type of analysis does not specifically address the issue of possible uplift. The applicant indicates that "vertical uplift between the liner plate and the internal structure or basemat is not credible because overturning is resisted by the configuration of the internal structure/haunch and the gravity loads due to the mass of the internal structure is greater than the vertical acceleration." This statement is not sufficient because preventing overturning of the entire RBIS does not ensure that no separation occurs at one side of the overturning moment. As stated in the original RAI, the applicant is requested to demonstrate that no uplift occurred between the containment internal structure and the containment liner as well as uplift between the containment liner and the NI basemat due to the overturning loads.

**Response to Question 03.08.01-37:**

The analysis that is the subject of this question has been superseded by the analysis described in the Response to RAI 190, Question 03.08.01-29.

**FSAR Impact:**

The U.S. EPR FSAR will not be changed as a result of this question.