

## ArevaEPRDCPEm Resource

---

**From:** WILLIFORD Dennis (AREVA) [Dennis.Williford@areva.com]  
**Sent:** Friday, July 19, 2013 4:43 PM  
**To:** Snyder, Amy  
**Cc:** Buckberg, Perry; ANDERSON Katherine (EXTERNAL AREVA); DELANO Karen (AREVA); HONMA George (EXTERNAL AREVA); LEIGHLITER John (AREVA); LEWIS Ray (EXTERNAL AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA); SHEPHERD Tracey (AREVA); VANCE Brian (AREVA); MONTAGUE Kelvin (EXTERNAL AREVA); LENTZ Tony (EXTERNAL AREVA); ABAYAN Victor (AREVA)  
**Subject:** Advanced Response to U.S. EPR Design Certification Application FINAL RAI 592, Chapter 14, Section 14.03.02, Structural and Systems Engineering - ITAAC, Question 14.03.02-63  
**Attachments:** RAI 592 Advanced Response Q 14.03.02-63 US EPR DC.pdf

Amy,

Attached is an Advanced Response to RAI No. 592, Question 14.03.02-63 to support the final response date of August 22, 2013.

To keep our commitment to send a final response to this question by the commitment date, we need to receive all NRC staff feedback and comments no later than **August 15, 2013**.

Please let me know if NRC staff has any questions or if this response can be sent as final.

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** WILLIFORD Dennis (RS/NB)  
**Sent:** Friday, July 19, 2013 4:36 PM  
**To:** 'Snyder, Amy'  
**Cc:** Buckberg, Perry <[Perry.Buckberg@nrc.gov](mailto:Perry.Buckberg@nrc.gov)> ([Perry.Buckberg@nrc.gov](mailto:Perry.Buckberg@nrc.gov)); ANDERSON Katherine (External AREVA NP INC.); DELANO Karen (RS/NB); LEIGHLITER John (RS/NB); ROMINE Judy (RS/NB); RYAN Tom (RS/NB); MONTAGUE Kelvin (External AREVA NP INC.); LENTZ Tony (External RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application FINAL RAI 592, Chapter 14, Section 14.03.02, Structural and Systems Engineering - ITAAC

Amy,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 592 Response US EPR DC.pdf," provides a schedule since a technically correct and complete response to the one question cannot be provided at this time.

The following table indicates the respective pages in the response document, "RAI 592 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 592 — 14.03.02-63	2	2

The schedule for a technically correct and complete response to this question is provided below.

Question #	Advanced Response Date	NRC Comment Request Date	Final Response Date
RAI 592 — 14.03.02-63	July 19, 2013	August 15, 2013	<b>August 22, 2013</b>

Sincerely,

***Dennis Williford, P.E.***  
***U.S. EPR Design Certification Licensing Manager***  
***AREVA NP Inc.***

7207 IBM Drive, Mail Code CLT 2B  
Charlotte, NC 28262  
Phone: 704-805-2223  
Email: [Dennis.Williford@areva.com](mailto:Dennis.Williford@areva.com)

---

**From:** Snyder, Amy [<mailto:Amy.Snyder@nrc.gov>]  
**Sent:** Thursday, July 11, 2013 10:09 AM  
**To:** ZZ-DL-A-USEPR-DL  
**Cc:** Chakravorty, Manas; Xu, Jim; Buckberg, Perry; Segala, John; Welch, Christopher; Kowal, Mark  
**Subject:** U.S. EPR Design Certification Application FINAL RAI 592, Chapter 14, Section 14.03.02, Structural and Systems Engineering - ITAAC

Attached please find the subject request for additional information (RAI). A draft RAI was provided to you on July 3, 2013. On July 8, 2013, you informed us that the draft RAI does not contain proprietary information and that the draft RAI is clear and no further clarification is needed. As result, the RAI was not changed.

The schedule we have established for review of your application assumes technically correct and complete responses within 30 days of receipt of RAIs,. For any RAIs that cannot be answered **within 30 days or August 12, 2013**, it is expected that a date for receipt of this information will be provided to the staff within the 30-day period so that the staff can assess how this information will impact the published schedule.

Thank You,

Amy

Amy Snyder, U.S. EPR Design Certification Lead Project Manager  
Licensing Branch 1 (LB1)  
Division of New Reactor Licensing  
Office of New Reactors  
U.S. Nuclear Regulatory Commission

 Office: (301) 415-6822

 Fax: (301) 415-6406

 Mail Stop: T6-C20M

 E-mail: [Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)

**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 4615

**Mail Envelope Properties** (554210743EFE354B8D5741BEB695E6561DF581)

**Subject:** Advanced Response to U.S. EPR Design Certification Application FINAL RAI  
592, Chapter 14, Section 14.03.02, Structural and Systems Engineering - ITAAC, Question 14.03.02-63  
**Sent Date:** 7/19/2013 4:43:22 PM  
**Received Date:** 7/19/2013 4:43:30 PM  
**From:** WILLIFORD Dennis (AREVA)

**Created By:** Dennis.Williford@areva.com

**Recipients:**

"Buckberg, Perry" <Perry.Buckberg@nrc.gov>  
Tracking Status: None  
"ANDERSON Katherine (EXTERNAL AREVA)" <katherine.anderson.ext@areva.com>  
Tracking Status: None  
"DELANO Karen (AREVA)" <Karen.Delano@areva.com>  
Tracking Status: None  
"HONMA George (EXTERNAL AREVA)" <George.Honma.ext@areva.com>  
Tracking Status: None  
"LEIGHLITER John (AREVA)" <John.Leighliter@areva.com>  
Tracking Status: None  
"LEWIS Ray (EXTERNAL AREVA)" <Ray.Lewis.ext@areva.com>  
Tracking Status: None  
"ROMINE Judy (AREVA)" <Judy.Romine@areva.com>  
Tracking Status: None  
"RYAN Tom (AREVA)" <Tom.Ryan@areva.com>  
Tracking Status: None  
"SHEPHERD Tracey (AREVA)" <Tracey.Shepherd@areva.com>  
Tracking Status: None  
"VANCE Brian (AREVA)" <Brian.Vance@areva.com>  
Tracking Status: None  
"MONTAGUE Kelvin (EXTERNAL AREVA)" <kelvin.montague.ext@areva.com>  
Tracking Status: None  
"LENTZ Tony (EXTERNAL AREVA)" <Tony.Lentz.ext@areva.com>  
Tracking Status: None  
"ABAYAN Victor (AREVA)" <victor.abayan@areva.com>  
Tracking Status: None  
"Snyder, Amy" <Amy.Snyder@nrc.gov>  
Tracking Status: None

**Post Office:** FUSLYNCMX03.fdom.ad.corp

<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	3857	7/19/2013 4:43:30 PM
RAI 592 Advanced Response Q 14.03.02-63 US EPR DC.pdf		211692

**Options**

**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal

**Expiration Date:**  
**Recipients Received:**

**Response to**

**Advanced Request for Additional Information No. 592**

**7/11/2013**

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

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 14.03.02 - Structural and Systems Engineering - Inspections, Tests,  
Analyses, and Acceptance Criteria**

**Application Section: 14.03.02**

**Question 14.03.02-63:****Follow-up Question to RAI 557, Question 14.03.07-39**

In item a of RAI 527, Question 14.03.02-62 the staff had requested that the applicant revise Tier 1, Table 2.1.3-1 to reflect that the NAB will withstand design basis SSE and tornado wind loading without loss of structural integrity and have a margin of safety equivalent to that of a Category I structure. In its response the applicant stated that the U.S. EPR FSAR Tier 1, Section 2.1.3 and Table 2.1.3-1, Item 3.1 would be revised in the response to RAI 557, Question 14.03.07-39 in which the staff had requested a commitment by the applicant to apply the guidance of Regulatory Guide (RG) 1.143 for natural phenomena and man-induced hazards to the design of the NAB.

While the FSAR mark-up of Tier 1, Section 2.1.3, and Table 2.1.3-1 provided with the RAI 557, Question 14.03.07-39 response reflects verification of RG 1.143 commitments, it does not provide for verification of Seismic Category (SC) II design commitments for the NAB to withstand the design basis tornado and SSE loading described in FSAR Sections 3.3.2.3 and 3.7.2.8. Note that Revision 4 to FSAR Tier 2 Section 3.7.2.8 for the NAB (classified as SC II) states, *"The NAB is analyzed to SSE load conditions and designed to the codes and standards associated with Seismic Category I structures so that the margin of safety is equivalent to that of a Category I structure with the exception of sliding and overturning criteria."* Revision 4 to FSAR Section 3.3.2.3 also states, *"The NAB is a non-Seismic Category I structure. However, due to the proximity of this structure to Seismic Category I structures, there is potential for tornado wind load induced interaction. Therefore, this structure is analyzed using RG 1.76 tornado wind characteristics and designed to the codes and standards associated with Seismic Category I structures so that the margin of safety is equivalent to that of a Category I structure with the exception of sliding and overturning criteria."* Note that the earthquake load of RG 1.143 is one-half the SSE while the tornado load is three-fifths of the criteria in RG 1.76. As such, in addition to meeting the design guidance of RG 1.143 for RW-IIa structures, the licensing basis for the NAB should also meet the SC II commitments specified in the FSAR Sections 3.3.2.3 and 3.7.2.8. As the markups of Tier 1 Section 2.1.3 and Table 2.1.3-1 only address the RG 1.143 guidance and fail to address the SC II design commitments, the staff finds the response to be unacceptable.

The applicant is requested to address this issue and revise the U.S. EPR FSAR Tier 1, Section 2.1.3, "Mechanical Design Features" and Table 2.1.3-1, Item 3.1 markup accordingly to reflect verification of both RG 1.143 and SC II commitments regarding the design basis SSE and tornado wind loading.

**Response to Question 14.03.02-63:**

U.S. EPR FSAR Tier 1, Section 2.1.3 and Table 2.1.3-1, Item 3.1 will be revised to include commitments for the Nuclear Auxiliary Building regarding the design basis earthquake and tornado wind loading.

**FSAR Impact:**

U.S. EPR FSAR Tier 1, Section 2.1.3 and Table 2.1.3-1, Item 3.1 will be revised as described in the response and indicated on the enclosed markup.

# U.S. EPR Final Safety Analysis Report Markups



## 2.1.3 Nuclear Auxiliary Building

### Design Description

#### 1.0 System Description

The Nuclear Auxiliary Building (NAB) is a reinforced-concrete structure that houses non-safety related auxiliary systems required for normal power operation. There are no structures, systems, or components (SSC) required for safe shutdown located in the NAB. The NAB is located adjacent to the Fuel Building (FB), Safeguard Building (SB) Division 4, and Radioactive Processing Waste Building (RWB), as shown on Figure 2.1.3-1.

#### 2.0 Arrangement

2.1 The basic configuration of the NAB is as shown on Figure 2.1.3-1—Nuclear Auxiliary Building Location.

#### 3.0 Mechanical Design Features

3.1 The NAB is a Seismic Category II and RW-IIa structure and will withstand design basis loads listed in Regulatory Guide 1.143, except that the earthquake and tornado wind loads will comply with the criteria in Regulatory Guide 1.76, without loss of structural integrity.

3.2 Deleted.

### Inspections, Tests, Analyses, and Acceptance Criteria

Table 2.1.3-1 lists the NAB ITAAC.

**Table 2.1.3-1—Nuclear Auxiliary Building ITAAC**

	<b>Commitment Wording</b>	<b>Inspections, Tests, Analyses</b>	<b>Acceptance Criteria</b>
2.1	The basic configuration of the NAB is as shown on Figure 2.1.3-1.	An inspection of the basic configuration of the as-built NAB will be performed.	The basic configuration of the NAB is as shown on Figure 2.1.3-1.
3.1	The NAB is a Seismic Category II and RW-IIa structure and will withstand design basis loads listed in Regulatory Guide 1.143, <u>except that the earthquake and tornado wind loads will comply with the criteria in Regulatory Guide 1.76</u> , without loss of structural integrity.	An inspection and analysis will be performed to verify the as-built NAB structure will withstand design basis loads.	A report concludes that the NAB structure will withstand design basis loads listed in Regulatory Guide 1.143, <u>except that the earthquake and tornado wind loads will comply with the criteria in Regulatory Guide 1.76</u> , without loss of structural integrity.
3.2	Deleted.	Deleted.	Deleted.