

## ArevaEPRDCPEm Resource

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**From:** WELLS Russell (AREVA) [Russell.Wells@areva.com]  
**Sent:** Wednesday, April 13, 2011 3:45 PM  
**To:** Tesfaye, Getachew  
**Cc:** NOXON David (AREVA); GARDNER Darrell (AREVA); BENNETT Kathy (AREVA); DELANO Karen (AREVA); ROMINE Judy (AREVA); RYAN Tom (AREVA)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 5  
**Attachments:** RAI 420 Supplement 5 Response US EPR DC.PDF

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 420 on August 25, 2010. RAI 420 Supplement 1 sent on November 22, 2010, Supplement 2 sent on January 7, 2011, Supplement 3 sent on February 9, 2011 and Supplement 4 sent on March 14, 2011 provided a revised schedule. The attached file, "RAI 420 Supplement 5 Response US EPR DC" provides a technically correct and complete final response to 6 of the 11 questions, as committed.

Appended to this file are affected pages of the U.S. EPR Final Safety Analysis Report in redline-strikeout format which support the response to RAI 420 Question 03.02.02-9.

The following table indicates the respective pages in the response document, "RAI 420 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 420 — 03.02.01-13	2	3
RAI 420 — 03.02.01-14	4	5
RAI 420 — 03.02.01-15	6	7
RAI 420 — 03.02.01-16	8	8
RAI 420 — 03.02.01-17	9	9
RAI 420 — 03.02.02-9	10	10

To allow additional time to interact with the NRC, the schedule for technically correct and complete responses to the remaining 5 questions has been changed and is provided below.

Question #	Response Date
RAI 420 — 03.02.01-12	June 10, 2011
RAI 420 — 03.02.02-7	June 10, 2011
RAI 420 — 03.02.02-8	June 10, 2011
RAI 420 — 03.02.02-10	June 10, 2011
RAI 420 — 03.02.02-11	June 10, 2011

*Sincerely,*

*Russ Wells*

*U.S. EPR Design Certification Licensing Manager*

*AREVA NP, Inc.*

*3315 Old Forest Road, P.O. Box 10935*

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**From:** WELLS Russell (RS/NB)  
**Sent:** Monday, March 14, 2011 3:18 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 420 on August 25, 2010. RAI 420 Supplement 1 sent on November 22, 2010, Supplement 2 to sent on January 7, 2011, and Supplement 3 sent on February 9, 2011 provided a revised schedule

Additional time is required to interact with the NRC staff.

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

<b>Question #</b>	<b>Response Date</b>
RAI 420 — 03.02.01-12	April 20, 2011
RAI 420 — 03.02.01-13	April 20, 2011
RAI 420 — 03.02.01-14	April 20, 2011
RAI 420 — 03.02.01-15	April 20, 2011
RAI 420 — 03.02.01-16	April 20, 2011
RAI 420 — 03.02.01-17	April 20, 2011
RAI 420 — 03.02.02-7	April 20, 2011
RAI 420 — 03.02.02-8	April 20, 2011
RAI 420 — 03.02.02-9	April 20, 2011
RAI 420 — 03.02.02-10	April 20, 2011
RAI 420 — 03.02.02-11	April 20, 2011

*Sincerely,*

*Russ Wells*

*U.S. EPR Design Certification Licensing Manager*

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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Wednesday, February 09, 2011 1:23 PM  
**To:** 'Tesfaye, Getachew'

**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 420 on August 25, 2010. RAI 420 Supplement 1 sent on November 22, 2010 and Supplement 2 sent on January 7, 2011 provided a revised schedule

Additional time is required to interact with the NRC staff.

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

<b>Question #</b>	<b>Response Date</b>
RAI 420 — 03.02.01-12	March 16, 2011
RAI 420 — 03.02.01-13	March 16, 2011
RAI 420 — 03.02.01-14	March 16, 2011
RAI 420 — 03.02.01-15	March 16, 2011
RAI 420 — 03.02.01-16	March 16, 2011
RAI 420 — 03.02.01-17	March 16, 2011
RAI 420 — 03.02.02-7	March 16, 2011
RAI 420 — 03.02.02-8	March 16, 2011
RAI 420 — 03.02.02-9	March 16, 2011
RAI 420 — 03.02.02-10	March 16, 2011
RAI 420 — 03.02.02-11	March 16, 2011

Sincerely,

Martin (Marty) C. Bryan  
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AREVA NP Inc.  
Tel: (434) 832-3016  
702 561-3528 cell  
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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Friday, January 07, 2011 3:59 PM  
**To:** Tesfaye, Getachew  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 420 on August 25, 2010. Supplement 1 to RAI 420 provided a revised schedule on November 22, 2010

Additional time is required to interact with the NRC staff.

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

Question #	Response Date
RAI 420 — 03.02.01-12	February 14, 2011
RAI 420 — 03.02.01-13	February 14, 2011
RAI 420 — 03.02.01-14	February 14, 2011
RAI 420 — 03.02.01-15	February 14, 2011
RAI 420 — 03.02.01-16	February 14, 2011
RAI 420 — 03.02.01-17	February 14, 2011
RAI 420 — 03.02.02-7	February 14, 2011
RAI 420 — 03.02.02-8	February 14, 2011
RAI 420 — 03.02.02-9	February 14, 2011
RAI 420 — 03.02.02-10	February 14, 2011
RAI 420 — 03.02.02-11	February 14, 2011

Sincerely,

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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Monday, November 22, 2010 5:00 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a schedule for a technically correct and complete response to RAI No. 420 on August 25, 2010.

Additional time is required to interact with the NRC staff.

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

Question #	Response Date
RAI 420 — 03.02.01-12	January 10, 2011
RAI 420 — 03.02.01-13	January 10, 2011
RAI 420 — 03.02.01-14	January 10, 2011
RAI 420 — 03.02.01-15	January 10, 2011
RAI 420 — 03.02.01-16	January 10, 2011
RAI 420 — 03.02.01-17	January 10, 2011
RAI 420 — 03.02.02-7	January 10, 2011

RAI 420 — 03.02.02-8	January 10, 2011
RAI 420 — 03.02.02-9	January 10, 2011
RAI 420 — 03.02.02-10	January 10, 2011
RAI 420 — 03.02.02-11	January 10, 2011

Sincerely,

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**From:** BRYAN Martin (External RS/NB)  
**Sent:** Wednesday, August 25, 2010 8:20 PM  
**To:** 'Tesfaye, Getachew'  
**Cc:** DELANO Karen (RS/NB); ROMINE Judy (RS/NB); BENNETT Kathy (RS/NB); NOXON David (RS/NB)  
**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 420 Response US EPR DC.pdf," provides the schedule for technically correct and complete responses to these questions.

The following table indicates the respective pages in the response document, "RAI 420 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 420 — 03.02.01-12	2	2
RAI 420 — 03.02.01-13	3	3
RAI 420 — 03.02.01-14	4	4
RAI 420 — 03.02.01-15	5	5
RAI 420 — 03.02.01-16	6	6
RAI 420 — 03.02.01-17	7	7
RAI 420 — 03.02.02-7	8	8
RAI 420 — 03.02.02-8	9	9
RAI 420 — 03.02.02-9	10	10
RAI 420 — 03.02.02-10	11	11
RAI 420 — 03.02.02-11	12	12

The schedule for technically correct and complete responses to these questions is provided below.

Question #	Response Date
RAI 420 — 03.02.01-12	November 23, 2010
RAI 420 — 03.02.01-13	November 23, 2010
RAI 420 — 03.02.01-14	November 23, 2010
RAI 420 — 03.02.01-15	November 23, 2010
RAI 420 — 03.02.01-16	November 23, 2010

RAI 420 — 03.02.01-17	November 23, 2010
RAI 420 — 03.02.02-7	November 23, 2010
RAI 420 — 03.02.02-8	November 23, 2010
RAI 420 — 03.02.02-9	November 23, 2010
RAI 420 — 03.02.02-10	November 23, 2010
RAI 420 — 03.02.02-11	November 23, 2010

Sincerely,

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**From:** Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]  
**Sent:** Monday, July 26, 2010 7:20 AM  
**To:** ZZ-DL-A-USEPR-DL  
**Cc:** McNally, Richard; Dixon-Herrity, Jennifer; Patel, Jay; Miernicki, Michael; Colaccino, Joseph  
**Subject:** U.S. EPR Design Certification Application RAI No. 420 (4687,4661), FSAR Ch. 3, OPEN ITEM

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on June 15, 2010, and on July 19, 2010, you informed us that the RAI is clear and no further clarification is needed. As a result, no change is made to the draft RAI. 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, 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.

Thanks,  
Getachew Tesfaye  
Sr. Project Manager  
NRO/DNRL/NARP  
(301) 415-3361

**Hearing Identifier:** AREVA\_EPR\_DC\_RAIs  
**Email Number:** 2841

**Mail Envelope Properties** (1F1CC1BBDC66B842A46CAC03D6B1CD41043A7A00)

**Subject:** Response to U.S. EPR Design Certification Application RAI No. 420, FSAR Ch. 3, OPEN ITEM, Supplement 5  
**Sent Date:** 4/13/2011 3:45:26 PM  
**Received Date:** 4/13/2011 3:45:29 PM  
**From:** WELLS Russell (AREVA)

**Created By:** Russell.Wells@areva.com

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<b>Files</b>	<b>Size</b>	<b>Date &amp; Time</b>
MESSAGE	11368	4/13/2011 3:45:29 PM
RAI 420 Supplement 5 Response US EPR DC.PDF		229182

**Options**

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

**Response to**

**Request for Additional Information No. 420(4687, 4661), Revision 0, Supplement 5**

**7/26/2010**

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

**AREVA NP Inc.**

**Docket No. 52-020**

**SRP Section: 03.02.01 - Seismic Classification**

**SRP Section: 03.02.02 - System Quality Group Classification**

**Application Section: 3.2.1**

**QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects)  
(EMB2)**



**Question 03.02.01-13:****OPEN ITEM**

The seismic classification of each SSC depends on the safety function and classification as safety-related or nonsafety-related. FSAR Subsection 3.2 does not clearly define the safety function of SSCs that are important to safety, but are classified as nonsafety-related. For example, certain components considered nonsafety-related that are internal to the reactor vessel, or part of the control rod drive system, accident monitoring functions, severe accident instrumentation and control and the core melt stabilization system appear to be important to safety, but are not specifically identified as safety-related and seismic category I. It is presumed that these SSCs do not perform one of the three specific safety-functions defined as safety-related, but it is not clear if these SSCs are required to be or are credited to be functional during or following a seismic event.

For those SSCs that are important to safety and are classified as nonsafety-related in FSAR Table 3.2.2-1, the applicant was requested in RAI 03.02.01-3 to clarify the technical basis for each nonsafety-related classification and identify if the seismic classification as seismic category II or other seismic classification is consistent with the PRA assumptions.

The RAI response iterated that the terms safety-related and important to safety are synonymous. The staff disagrees that these terms are synonymous and this is addressed in RAI 03.02.01-1. The applicant also referred to Chapter 19 RAI responses that provided a list of SSCs modeled in the PRA-based seismic margin assessment. However, Table 19.1-107 provided in the responses does not list specific equipment with component numbers, and it is still not clear if the specific SSCs discussed in RAI 03.02.01-03 are credited to be functional during or following a seismic event. As indicated in the Chapter 19 RAI responses, the seismic margin assessment does not credit SSCs that are not seismically qualified, but the applicant should establish the basis for post earthquake functionality of any important to safety SSCs that are currently classified as nonseismic. If there are no important to safety SSCs that are classified as non-seismic, the applicant should so clarify.

**Response to Question 03.02.01-13:**

AREVA does not consider the terms “important to safety” and “safety-related” to be synonymous. However, these terms are often used interchangeably within guidance documents.

The Question states that “it is still not clear if the specific SSCs discussed in RAI 03.02.01-03 are credited to be functional during or following a seismic event.” The SSC that are required to be functional during or following a seismic event are classified as Seismic Category I in U.S EPR FSAR Tier 2, Table 3.2.2-1 in compliance with the guidance of RG 1.29. Regarding the SSC addressed in RAI Question 03.02.01-03:

- In accordance with RG 1.29, the reactor coolant pressure boundary, the reactor core and reactor vessel internals, such as the control rod drive mechanism (CRDM), latch mechanism, the pressure boundary portions of the CRDMs, the heavy reflector and its associated components, are Seismic Category I. As shown in U.S EPR FSAR Tier 2, Table 3.2.2-1, since the non-pressure boundary components of the reactor pressure vessel are classified as NS-AQ and Seismic Category II, in accordance with RG 1.29 and U.S EPR FSAR Tier 2, Section 3.2.1.2, they are designed to withstand safe shutdown earthquake

(SSE) seismic loads without incurring a failure that permits deleterious interaction with any Seismic Category I SSC, or that could result in injury to main control room occupants.

- Components used for accident monitoring functions are also classified as Seismic Category I (see U.S. EPR FSAR Tier 2, Table 3.2.2-1, KKS Code JR) in accordance with RG 1.29.
- There are no regulatory requirements for the severe accident instrumentation and control and the core melt stabilization system to be classified as safety-related and Seismic Category I. As noted in NRC-approved AREVA NP Topical Report ANP-10268P-A, and in U.S. EPR FSAR Tier 2, Section 19.2, these SSC are relied upon to mitigate the consequences of a severe accident which is a beyond design basis accident.

The Response to RAI 234, Supplement 2, Question 19-304 revised the U.S. EPR FSAR to include a list of specific SSC credited in the PRA-based seismic margin assessment. The list is shown in U.S. EPR FSAR Tier 2, Table 19.1-106. The U.S. EPR PRA-based seismic margin assessment does not credit any non-seismic equipment to meet the commitment for a high confidence, low probability of failure plant-level capacity of 1.67 times the SSE. Therefore no SSC currently classified as non-seismic are required to meet GDC 2 or any other licensing commitments related to seismic design.

**FSAR Impact:**

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

**Question 03.02.01-14:****OPEN ITEM**

On the basis of FSAR Table 1.9-4 and Subsection 19.1.7.5, it is understood that the RTNSS process is not applicable to the US EPR design. However, risk insights can provide useful information in determining the safety significance and seismic classification of important to safety SSCs that are either considered safety-related or nonsafety-related. The Staff Requirement Memorandum (SRM) on SECY-95-132 approved that applications for new reactors would include a list of risk-significant SSCs. The list of risk-significant SSCs that are part of the reliability assurance program could not be located in either Subsection 17.4 or Section 19 of the FSAR, but the subsequent response to RAI 17.4-1 includes a component list as PRA input to the RAP component identification process and the response to RAI 17.04-2 identifies that the full scope RAP will include passive components and the COL applicant is to provide the final list. The response to RAI 17.04-16 further identified that the FSAR will be revised to include a list of risk-significant SSCs.

In RAI 03.02.01-4, the applicant was requested to advise if the PRA or other design documents identify the safety significance of each important to safety SSC when subjected to an SSE so that the seismic classification can be evaluated based on the specific safety function. If this design information and list of risk-significant SSCs is in a topical report or other auditable form, reference the appropriate documents.

The RAI response referred to Chapter 17 RAI responses that provided several lists of important SSCs based on the Fussell-Vesely value, risk achievement value or common cause. The response to Chapter 17 RAI also provided a list of systems that were added to the reliability assurance program. In Table 17.04-1-1 attached to RAI response 17.04-1, components such as the station black out diesel generators XKA50 and XKA80 are identified as risk significant components; however, in Table 3.2.2-1 of the FSAR, the station black out generators are designated as non-seismic. As stated previously, the nonseismic SSCs are not credited in the seismic margin assessment, so the applicant should clarify the basis for the non-seismic classification of any risk-significant SSC such as the station blackout diesel generators.

**Response to Question 03.02.01-14:**

The guidance for determining whether a component is seismic or non-seismic is provided in RG 1.29 in accordance with SRP 3.2.1 (see the response to Question 03.02.01-12 of this RAI). RG 1.29 does not identify the station blackout (SBO) diesel generators in the list of SSC that should be designated as Seismic Category I; therefore they are classified as non-seismic. This is consistent with Appendix B to RG 1.155, which states that seismic qualification is not required for SBO equipment and that they are not required to be safety-related. See the Response to Question 03.02.02-7 of this RAI for further information on the classification on the SBO diesel generators.

For seismic risk significance determination, the U.S. EPR design uses a PRA-based seismic margin assessment to determine seismic-related risk significance as part of an overall input to the reliability assurance program. The U.S. EPR PRA-based seismic margin assessment does not credit any non-seismic equipment to meet the commitment for a high confidence low probability of failure plant-level capacity of 1.67 times the safe shutdown earthquake (SSE). Therefore, no additional risk significant SSC currently classified as non-seismic are required to meet GDC 2 or any other licensing commitments related to seismic design.

**FSAR Impact:**

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

**Question 03.02.01-15:****OPEN ITEM**

10 CFR Part 52.47 identifies that the Commission will require prior to design certification, that information normally contained in certain procurement specifications and construction and installation specifications be completed and available for audit. FSAR Tier 1 Chapter 2 includes system based design descriptions including structures. This Chapter identifies that specifications exist for components, piping and supports shown as ASME Section III. It is understood that this information is based on the information included in FSAR Tier 2 and design specifications are required for ASME Section III systems and components, but it is not clear if specifications exist for structures and non-ASME systems and components. In RAI 03.02.01-5, the applicant was requested to clarify if the design information on seismic classification for all important to safety SSCs within the scope of the certified design, including structures, is included in specifications and if this information is now available for audit.

The RAI response stated that the design information contained in the Tier 2 portion of the design certification application is provided in system design requirements documents, system description documents and P&IDs. The design information on the seismic classification for SSCs within the scope of the certified design, including structures, is included in these design documents which are available for NRC inspection. The applicant also clarifies that the statements in Tier 1 are written in the present tense as they would exist at the time that a closeout letter is submitted. The Tier 1 statement that specifications exist does not imply that they currently exist. The staff will schedule the audit when the design information is available, and the applicant is requested to identify when such design information will be available.

**Response to Question 03.02.01-15:**

The statements in the U.S. EPR Tier 1 sections referring to the existence of specifications were deleted in response to the following other RAIs:

- The Response to RAI 149, Question 03.09.05-3 deleted ITAAC for ASME component and piping specifications.
- The Response to RAI 149, Question 03.09.05-4 deleted ITAAC for ASME core support structure specifications.
- The Response to RAI 156, Supplement 1, Question 14.03.03-28 deleted ITAAC for ASME piping support specifications.
- The Response to RAI 182, Supplement 2, Question 14.03-10 F reiterated the above information.

SRP 3.9.2 provides guidance on the requirements that the NRC will require prior to design certification, that information normally contained in certain procurement specifications and construction and installation specifications be completed and available for audit. In accordance with SRP 3.9.3, the design specifications that are required to be made available for NRC inspection are for ASME Code Class 1, 2, and 3 components, component supports, and core support structures (e.g., SRP 3.9.3 Appendix A Section 4.A and Section 7.A.(i) and (iv)). RAI 107, Question 3.9.3-4 and RAI 404, Question 03.09.03-24 address the availability of design specifications.

**FSAR Impact:**

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

**Question 03.02.01-16:****OPEN ITEM**

FSAR Tier 1 Chapter 2 and FSAR Tier 2 Subsection 14.3 describe various ITAAC to confirm that systems designated as ASME Section III have been designed and tested in accordance with Code requirements. It is not clear if there is a proposed ITAAC or DAC to address the design and testing of other systems that may be important to safety that are not constructed to ASME Section III. In RAI 03.02.01-6, the applicant was requested to identify if there is an ITAAC or DAC to address the design and analysis of other important to safety systems that are not designated as ASME Section III or explain why an ITAAC or DAC is not required.

In its response, the applicant clarified that ITAAC are also provided in the U.S. EPR FSAR Tier 1 for safety-significant systems that are not specified as ASME Code Section III. For example, ITAAC are provided in the U.S. EPR FSAR Tier 1, Section 2.3.3 for portions of the severe accident heat removal system (SAHRS), such as the SAHRS pump, SAHRS heat exchanger, and spray header that are not specified as ASME Code Section III.

Tier 1 Table 2.2.8-2 lists ITAAC for Seismic Category II equipment to ensure that they can withstand design basis seismic event without losing their structural stability. However, in other sections of Tier 1, there are no ITAAC for Seismic Category II SSCs (e.g., reactor coolant system, liquid radwaste system, etc.) The applicant is requested to review all ITAAC tables to include Seismic Category II SSCs. If ITAAC do not include all Seismic Category II SSCs, state the basis. The applicant stated in its response that safety significant design features are included in U.S. EPR FSAR Tier 1, and the associated Seismic Category II entries in FSAR Tier 1 tables will be deleted. Regulatory Position C.2 of RG 1.29 states that non-safety related SSCs that can reduce the function of safety-related SSCs should be designed and constructed to withstand the effect of an SSE. If the applicant decides not to have Seismic Category II ITAAC on an SSC level, at a minimum, there should be a generic ITAAC to ensure that the as-built nonsafety-related SSCs in the plant will not reduce the function of safety-related SSCs during and after an SSE. The applicant is requested to clarify if a generic ITAAC exists to verify classifications and if Tier 1 ITAAC are consistent with Tier 2 ITAAC.

**Response to Question 03.02.01-16:**

The Response to RAI 370, Question 03.07.03-38 provided a new generic ITAAC in U.S. EPR FSAR Tier 1, Section 3.9 to verify that the as-built non-safety-related systems structures and components (SSC) in the plant will not reduce the function of safety-related SSC during and after a safe shutdown earthquake.

**FSAR Impact:**

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

**Question 03.02.01-17:****OPEN ITEM**

GDC 2 identifies that SSCs that are important to safety are to be designed to withstand the effects of earthquakes. Certain electrical systems that are considered risk-significant are identified in Table 3.2.2-1 as nonsafety-related and NSC (non-seismic). For example, portions of the PAS, PPS, NPSS, 12UPS and AAC electrical systems are identified as having a high review level in the NRC's risk insights document that is based on the applicant's Chapter 19 information, but these systems are identified as nonsafety-related and are classified as NSC. In RAI 03.02.01-7, the applicant was requested to identify the basis for the NSC classification for these potentially risk-significant and important to safety electrical systems.

The RAI response referred to the response to RAI 03.02.01-3. The response to RAI 03.02.01-3 iterated that the terms safety-related and important to safety are synonymous. The staff disagrees with the applicant that these two terms are synonymous. The response also referred to Chapter 19 RAI responses that provided a list of SSCs modeled in the PRA-based seismic margin assessment. However, Table 19.1-107 provided in the responses does not list specific equipments with component numbers, and it is still not clear the basis for classifying the PAS PPS, NPSS, 12UPS and AAC electrical systems as NSC. The applicant is requested to justify the seismic classification of risk-significant electrical systems that may be important to safety. Alternatively, if the seismic classification of electrical systems is addressed in Chapter 8, the applicant should so indicate.

**Response to Question 03.02.01-17:**

See the Responses to Questions 03.02.01-12 and 03.02.01-13 of this RAI for more information about the terms "safety-related" and "important to safety."

The Response to RAI 234, Supplement 2, Question 19-304 revised the FSAR to include a list of specific SSC credited in the PRA-based seismic margin assessment. The list is shown in U.S. EPR FSAR Tier 2, Table 19.1-106. The U.S. EPR PRA-based seismic margin assessment does not credit any non-seismic equipment to meet the commitment for a high confidence, low probability of failure plant-level capacity of 1.67 times the SSE. Therefore, no SSC currently classified as non-seismic, such as process automation system (PAS), preferred power supply (PPS), Normal Power Supply System (NPSS), 12-hour uninterruptible power supply (12UPS) or alternate AC (AAC) electrical systems are required to meet GDC 2 or any other licensing commitments related to seismic design.

**FSAR Impact:**

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



**Question 03.02.02-9:****OPEN ITEM**

FSAR subsections 3.2.1.1 and 3.2.1.2 identify that Seismic Category I and II SSCs are subject to the quality assurance program requirements of 10 CFR Part 50, Appendix B. FSAR Table 3.2.2-1 typically identifies that the 10 CFR 50 Appendix B QA Program applies to SSCs classified as Seismic Category I or II. However, in FSAR Table 3.2.2-1, a limited number of nonsafety-related SSCs classified as Seismic Category I and Seismic Category II are not required to apply the 10 CFR 50 Appendix B Program. For example, certain nonsafety-related monitors supporting the leak detection system are identified as Seismic Category I with no 10 CFR 50 Appendix B Program applied. In RAI 03.02.02-4, the applicant was requested to correct this apparent discrepancy or justify the basis for not applying pertinent requirements of the 10 CFR 50 Appendix B Program to SSCs that are classified as Seismic Category I and II.

The RAI response identified that a review of Table 3.2.2-1 determined that the 10 CFR 50 Appendix B program was not applied to certain Seismic Category I items including KLC system mechanical components and radioactivity monitors used to support the leak detection system. The applicant identified that Table 3.2.2-1 will be revised to apply the 10 CFR 50 Appendix B program to these mechanical components. However, the response did not address Seismic Category II SSCs, such as the KLC system Fire Dampers. Clarify if all Category II SSCs, such as the KLC system fire protection dampers, apply pertinent requirements of the 10 CFR 50 Appendix B program and update FSAR Table 3.2.2-1 to be consistent.

**Response to Question 03.02.02-9:**

The safeguard building controlled area ventilation system (KLC) fire dampers were changed to safety-related and Seismic Category I and applied the 10 CFR 50 Appendix B program (see the markups to the U.S. EPR FSAR associated with RAI 277, Question 09.04.05-2). AREVA NP has determined that 10 CFR 50 Appendix B should be applied to the following components which are also Seismic Category II.

- 30XJX10/20/30/40 Air Start System Up to Receiver Inlet Check Valves.
- 30XJG10/20/30/40 Jacket Water Standby Heater Circuit.
- 30XJV10/20/30/40 Lube Oil Keepwarm/Prelube Circuit.
- 30SAB01/04 SD001 Smoke Detector.
- 30SAB 01/02/03/04 SD002 Smoke Detector.

**FSAR Impact:**

U.S. EPR FSAR Tier 2, Table 3.2.2-1 will be revised as described in the response and indicated on the enclosed markup

# U.S. EPR Final Safety Analysis Report Markups



Table 3.2.2-1—Classification Summary  
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KKS System or Component Code	SSC Description	Safety Classification (Note 15)	Quality Group Classification	Seismic Category (Note 16)	10 CFR 50 Appendix B Program (Note 5)	Location (Note 17)	Comments/ Commercial Code
<b>Emergency Diesel Generator Set</b>							
XJA, XKA, XJG, XJN XJQ, XJR, XJV, XJX (10/20/30/40), CXN (10/11/20/21/30/31/40/41)							
30XKA10/20/30/40 AG001	AC Synchronous Generator	S	N/A	I	Yes <span style="border: 1px solid red; padding: 2px;">03.02.02-9</span>	UBP	IEEE 387; NEMA MG 1-2003; IEEE 112
30XJX10/20/30/40	Air Start System Receiver Inlet Check Valves to Engine	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30XJX10/20/30/40	Air Start System Up to Receiver Inlet Check Valves	NS-AQ	D	II	<del>No</del> Yes	UBP	ANSI/ASME B31.1 <sup>6</sup>
30XJQ10/20/30/40	Combustion Air System	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30CXN10/20/30/40	Control Panels	S	N/A	I	Yes	UBP	IEEE 420
30XJG10/20/30/40	Cooling Water System	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30XJA10/20/30/40 AV100	Diesel Engine (Excluding Engine-Driven Cooling, Lubrication, and Fuel Pumps)	S	N/A	I	Yes	UBP	

Table 3.2.2-1—Classification Summary  
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KKS System or Component Code	SSC Description	Safety Classification (Note 15)	Quality Group Classification	Seismic Category (Note 16)	10 CFR 50 Appendix B Program (Note 5)	Location (Note 17)	Comments/Commercial Code
30XJA10/20/30/40 AP100	Engine Governor	S	N/A	I	Yes	UBP	
30XJR10/20/30/40	Exhaust Emissions Equipment and Pipe	NS	E	NSC	No	UBP	ANSI/ASME B31.1 <sup>6</sup>
30XJR10/20/30/40	Exhaust Silencer and Exhaust Stack	NS-AQ	D	II	Yes	UBP	ANSI/ASME B31.1 <sup>6</sup>
30XJR10/20/30/40	Exhaust System, Bypass Valve and Duct	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30XJN10/20/30/40	Fuel Oil System	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30XJG10/20/30/40	Jacket Water Standby Heater Circuit	NS-AQ	D	II	<del>No</del> Yes	UBP	ANSI/ASME B31.1 <sup>6</sup>
30XJV10/20/30/40	Lube Oil Keepwarm/Pre-lube Circuit	NS-AQ	D	II	<del>No</del> Yes	UBP	ANSI/ASME B31.1 <sup>6</sup>
30XJV10/20/30/40	Lube Oil System	S	C	I	Yes	UBP	ASME Class 3 <sup>3</sup>
30XJA10/20/30/40 AN100A/B	Turbochargers	S	N/A	I	Yes	UBP	



Table 3.2.2-1—Classification Summary  
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KKS System or Component Code	SSC Description	Safety Classification (Note 15)	Quality Group Classification	Seismic Category (Note 16)	10 CFR 50 Appendix B Program (Note 5)	Location (Note 17)	Comments/ Commercial Code
30SAB01/02/03/04 BS002	Silencers on Fan Suctions	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
30SAB01/04 SD001	Smoke Detector	NS-AQ	D	II	<del>No</del> Yes	UJK	Local Bldg. Code
30SAB 01/02/03/04 SD002	Smoke Detector	NS-AQ	D	II	<del>No</del> Yes	UJK	Local Bldg. Code
30SAB01/04 TG001	Toxic Gas Sensor	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
30SAB01/02/03/04 AN001	Supply Air Fans	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
30SAB45 AA003	Upstream Exhaust Air Isolation Damper	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
30SAB01/02/03/04 AA010	Volume Control Dampers, Manually Adjusted for Recirc Unit	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
30SAB01/04 AA012	Pressure Control Damper	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>
<b>SAC Electrical Division of Safeguard Building Ventilation System</b>							
30SAC05/08 AC001	Air Cooling Coils - Maintenance Train Supply Air	NS	E	NSC	No	1UJK, 4UJK	
30SAC61/62/63/64 AC001/002	Air Cooling Coils - Recirculation Cooling Units	S	C	I	Yes	UJK	ASME AG-1 <sup>14</sup>