

ArevaEPRDCPEm Resource

From: BRYAN Martin (EXT) [Martin.Bryan.ext@areva.com]
Sent: Wednesday, May 12, 2010 10:57 AM
To: Tesfaye, Getachew
Cc: DELANO Karen V (AREVA NP INC); ROMINE Judy (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); VAN NOY Mark (EXT); GARDNER George Darrell (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 6
Attachments: Batch 291 Supplement 6 Response US EPR DC.pdf

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010 to address 4 of the remaining 7 questions. AREVA NP submitted Supplement 5 to the response on March 19, 2010 to address 1 of the remaining 3 questions. The attached file, "RAI 291 Supplement 6 Response US EPR DC.pdf" provides technically correct and complete responses to 2 of the remaining 2 questions as committed.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 6 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.10-24	2	2
RAI 291 — 03.10-26	3	3

This concludes the formal AREVA NP response to RAI 291, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

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

From: BRYAN Martin (EXT)
Sent: Friday, March 19, 2010 3:55 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 5

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. AREVA NP submitted Supplement 4 to the response on March 11, 2010 to address 4 of the remaining 7 questions. The attached file, "RAI 291 Supplement 5 Response US EPR DC.pdf" provides technically correct and complete responses to 1 of the remaining 3 questions as committed.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 5 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.02.01-11	2	3

The schedule for technically correct and complete responses to the remaining 2 questions is unchanged and provided below:

Question #	Response Date
RAI 291 — 03.10-24	May 12, 2010
RAI 291 — 03.10-26	May 12, 2010

Sincerely,

Martin (Marty) C. Bryan
 Licensing Advisory Engineer
 AREVA NP Inc.
 Tel: (434) 832-3016
Martin.Bryan.ext@areva.com

From: BRYAN Martin (EXT)
Sent: Thursday, March 11, 2010 6:40 PM
To: 'Tesfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 4

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. AREVA NP submitted Supplement 3 to the response on February 11, 2010 to address 10 of the remaining 17 questions. The attached file, "RAI 291 Supplement 4 Response US EPR DC.pdf" provides technically correct and complete responses to 4 of the remaining 7 questions.

The commitment dates for responding to Questions 03.10-24 and 03.10-26 have been changed to May 12, 2010. Question 03.02.01-11 is deferred to allow additional time to finalize response. Question 03.10-24 is deferred to assess potential impact on other sections of the U.S. EPR FSAR. Question 03.10-25 is deferred to allow additional time to finalize response.

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 291 Questions 03.07.02-60, 03.09.05-24, 03.09.05-25, and 03.10-27.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 4 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 291 — 03.07.02-60	2	3
RAI 291 — 03.09.05-24	4	4
RAI 291 — 03.09.05-25	5	5
RAI 291 — 03.10-27	6	6

The schedule for technically correct and complete responses to the remaining 3 questions has been changed and is provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 19, 2010
RAI 291 — 03.10-24	May 12, 2010
RAI 291 — 03.10-26	May 12, 2010

Sincerely,

Martin (Marty) C. Bryan
Licensing Advisory Engineer
AREVA NP Inc.
Tel: (434) 832-3016
Martin.Bryan.ext@areva.com

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Thursday, February 11, 2010 10:03 PM
To: 'Tsfaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); ROMINE Judy (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 3

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a revised schedule for the remaining 18 questions. AREVA NP submitted Supplement 2 to the response on January 19, 2010 to address 1 of the remaining 18 questions. The attached file, "RAI 291 Supplement 3 Response US EPR DC.pdf" provides technically correct and complete responses to 10 of the remaining 17 questions.

The commitment dates for responding to Questions 03.09.05-24, 03.09.05-25, 03.10-24, and 03.10-26 have been changed to March 11, 2010 because of interdependency with other design work. The response for Question 03.07.02-61, which had a commitment date of March 11, 2010, is being provided ahead of schedule in this supplement, Supplement 3.

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 291 Questions 03.07.02-62, 03.09.05-26, 03.10-28, and 03.10-30.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 3 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 291 — 03.07.01-26	2	2
RAI 291 — 03.07.02-61	3	3
RAI 291 — 03.07.02-62	4	5
RAI 291 — 03.09.05-23	6	6
RAI 291 — 03.09.05-26	7	7
RAI 291 — 03.09.05-27	8	8
RAI 291 — 03.10-25	9	9
RAI 291 — 03.10-28	10	10
RAI 291 — 03.10-29	11	11
RAI 291 — 03.10-30	12	13

The schedule for technically correct and complete responses to the remaining 7 questions has been changed and is provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.09.05-24	March 11, 2010
RAI 291 — 03.09.05-25	March 11, 2010
RAI 291 — 03.10-24	March 11, 2010
RAI 291 — 03.10-26	March 11, 2010
RAI 291 — 03.10-27	March 11, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: DUNCAN Leslie E (AREVA NP INC)
Sent: Tuesday, January 19, 2010 12:02 PM
To: 'Teshaye, Getachew'
Cc: DELANO Karen V (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 2

Getachew,

AREVA NP Inc. (AREVA NP) provided responses to 1 of the 19 questions of RAI No. 291 on October 19, 2009. AREVA NP submitted Supplement 1 to the response on January 7, 2010 providing a schedule for the remaining 18 questions. The attached file, "RAI 291 Supplement 2 Response US EPR DC.pdf" provides a technically correct and complete response to 1 of the remaining 18 questions, as committed.

The following table indicates the respective pages in the response document, "RAI 291 Supplement 2 Response US EPR DC.pdf," that contain AREVA NP's response to the subject question.

Question #	Start Page	End Page
RAI 291 — 03.07.02-59	2	2

The schedule for technically correct and complete responses to the remaining 17 questions is unchanged and provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010
RAI 291 — 03.07.01-26	February 11, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.07.02-61	March 11, 2010
RAI 291 — 03.07.02-62	February 11, 2010
RAI 291 — 03.09.05-23	February 11, 2010
RAI 291 — 03.09.05-24	February 11, 2010
RAI 291 — 03.09.05-25	February 11, 2010
RAI 291 — 03.09.05-26	February 11, 2010
RAI 291 — 03.09.05-27	February 11, 2010
RAI 291 — 03.10-24	February 11, 2010
RAI 291 — 03.10-25	February 11, 2010
RAI 291 — 03.10-26	February 11, 2010
RAI 291 — 03.10-27	March 11, 2010
RAI 291 — 03.10-28	February 11, 2010
RAI 291 — 03.10-29	February 11, 2010
RAI 291 — 03.10-30	February 11, 2010

Sincerely,

Les Duncan
Licensing Engineer
AREVA NP Inc.
An AREVA and Siemens Company
Tel: (434) 832-2849
Leslie.Duncan@areva.com

From: Pederson Ronda M (AREVA NP INC)
Sent: Thursday, January 07, 2010 5:31 PM
To: 'Tsfaye, Getachew'
Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); VAN NOY Mark (EXT)
Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3, Supplement 1

Getachew,

AREVA NP Inc. (AREVA NP) provided a response to 1 of the 19 questions of RAI No. 291 on October 19, 2009.

Due to changes in engineering design approaches and supporting documents, holiday work schedules, and the volume of requests for additional information, responses for the remaining 18 questions are delayed.

The schedule for technically correct and complete responses to the remaining 18 questions has been changed and is provided below:

Question #	Response Date
RAI 291 — 03.02.01-11	March 11, 2010
RAI 291 — 03.07.01-26	February 11, 2010
RAI 291 — 03.07.02-59	January 21, 2010
RAI 291 — 03.07.02-60	March 11, 2010
RAI 291 — 03.07.02-61	March 11, 2010
RAI 291 — 03.07.02-62	February 11, 2010
RAI 291 — 03.09.05-23	February 11, 2010
RAI 291 — 03.09.05-24	February 11, 2010
RAI 291 — 03.09.05-25	February 11, 2010
RAI 291 — 03.09.05-26	February 11, 2010
RAI 291 — 03.09.05-27	February 11, 2010
RAI 291 — 03.10-24	February 11, 2010
RAI 291 — 03.10-25	February 11, 2010
RAI 291 — 03.10-26	February 11, 2010
RAI 291 — 03.10-27	March 11, 2010
RAI 291 — 03.10-28	February 11, 2010
RAI 291 — 03.10-29	February 11, 2010
RAI 291 — 03.10-30	February 11, 2010

Sincerely,

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

An AREVA and Siemens company

3315 Old Forest Road

Lynchburg, VA 24506-0935

Phone: 434-832-3694

Cell: 434-841-8788

From: Pederson Ronda M (AREVA NP INC)

Sent: Monday, October 19, 2009 6:54 PM

To: 'Tefaye, Getachew'

Cc: BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC); VAN NOY Mark (EXT)

Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch. 3

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 291 Response US EPR DC.pdf," provides a technically correct and complete response to 1 of the 19 questions.

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 291 Question 03.07.03-36

The following table indicates the respective page in the response document, "RAI 291 Response US EPR DC.pdf," that contains AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 291 — 03.02.01-11	2	2
RAI 291 — 03.07.01-26	3	3
RAI 291 — 03.07.02-59	4	4
RAI 291 — 03.07.02-60	5	5
RAI 291 — 03.07.02-61	6	6
RAI 291 — 03.07.02-62	7	7
RAI 291 — 03.07.03-36	8	9
RAI 291 — 03.09.05-23	10	10
RAI 291 — 03.09.05-24	11	11
RAI 291 — 03.09.05-25	12	12
RAI 291 — 03.09.05-26	13	13
RAI 291 — 03.09.05-27	14	14
RAI 291 — 03.10-24	15	15
RAI 291 — 03.10-25	16	16
RAI 291 — 03.10-26	17	17
RAI 291 — 03.10-27	18	18
RAI 291 — 03.10-28	19	19
RAI 291 — 03.10-29	20	20
RAI 291 — 03.10-30	21	21

A complete answer is not provided for 18 of the 19 questions. The schedule for a technically correct and complete response to these questions is provided below.

Question #	Response Date
RAI 291 — 03.02.01-11	January 7, 2010
RAI 291 — 03.07.01-26	January 7, 2010
RAI 291 — 03.07.02-59	January 7, 2010
RAI 291 — 03.07.02-60	January 7, 2010
RAI 291 — 03.07.02-61	January 7, 2010
RAI 291 — 03.07.02-62	January 7, 2010
RAI 291 — 03.09.05-23	January 7, 2010
RAI 291 — 03.09.05-24	January 7, 2010
RAI 291 — 03.09.05-25	January 7, 2010
RAI 291 — 03.09.05-26	January 7, 2010
RAI 291 — 03.09.05-27	January 7, 2010
RAI 291 — 03.10-24	January 7, 2010
RAI 291 — 03.10-25	January 7, 2010
RAI 291 — 03.10-26	January 7, 2010
RAI 291 — 03.10-27	January 7, 2010
RAI 291 — 03.10-28	January 7, 2010
RAI 291 — 03.10-29	January 7, 2010
RAI 291 — 03.10-30	January 7, 2010

Sincerely,

Ronda Pederson

ronda.pederson@areva.com

Licensing Manager, U.S. EPR Design Certification

AREVA NP Inc.

An AREVA and Siemens company

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Cell: 434-841-8788

From: Tesfaye, Getachew [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Thursday, September 17, 2009 7:43 AM
To: ZZ-DL-A-USEPR-DL
Cc: Wong, Yuken; Chakravorty, Manas; Chen, Pei-Ying; Dixon-Herrity, Jennifer; Samaddar, Sujit; Hawkins, Kimberly; Miernicki, Michael; Patel, Jay; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: U.S. EPR Design Certification Application RAI No. 291(3616,3691,3706,3707,3685,3703), FSAR Ch. 3

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 10, 2009, and on September 16, 2009, 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: 1409

Mail Envelope Properties (BC417D9255991046A37DD56CF597DB71061CBA82)

Subject: Response to U.S. EPR Design Certification Application RAI No. 291, FSAR Ch.
3, Supplement 6
Sent Date: 5/12/2010 10:57:03 AM
Received Date: 5/12/2010 10:57:06 AM
From: BRYAN Martin (EXT)

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

Recipients:

"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
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"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"VAN NOY Mark (EXT)" <Mark.Vannoy.ext@areva.com>
Tracking Status: None
"GARDNER George Darrell (AREVA NP INC)" <Darrell.Gardner@areva.com>
Tracking Status: None
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Tracking Status: None

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Files	Size	Date & Time
MESSAGE	16698	5/12/2010 10:57:06 AM
Batch 291 Supplement 6 Response US EPR DC.pdf		101682

Options

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

Response to

Request for Additional Information No. 291, Supplement 6

9/10/2009

U.S. EPR Standard Design Certification

AREVA NP Inc.

Docket No. 52-020

SRP Section: 03.02.01 - Seismic Classification

SRP Section: 03.07.01 - Seismic Design Parameters

SRP Section: 03.07.02 - Seismic System Analysis

SRP Section: 03.07.03 - Seismic Subsystem Analysis

SRP Section: 03.09.05 - Reactor Pressure Vessel Internals

**SRP Section: 03.10 - Seismic and Dynamic Qualification of Mechanical and
Electrical Equipment**

Application Section: EPR FSAR Section 3.10

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

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

Question 03.10-24:

Follow-up to Question 03.10-02

In its letter dated February 27th, 2009, the applicant's response to Question 03.10-02 is partially acceptable. The information provided in Section 3.9.3 of the applicant's submittal related only to pressure-retaining components, their supports, and the core-support structures (i.e., components in the ASME B&PV Code), whereas SRP 3.10 requires that full load combinations be considered in seismic qualification testing and analysis for all mechanical and electrical equipment. Consequently, the applicant is requested to provide supplemental information that describes explicitly the load combinations to be considered for all Seismic Category I, mechanical (non-pressure-retaining components), electrical, and I&C equipment not covered by ASME B&PV Code and IEEE Std. 344.

Response to Question 03.10-24:

The guidance provided in NUREG-0800 Section 3.10.(II), SRP Acceptance Criteria identifies that non-pressure retaining mechanical, electrical, and I&C equipment and their supports may be designed to the same applicable loads and load combinations as the pressure retaining mechanical equipment. These items will be subject to the same seismic design and service load combinations as identified in U.S. EPR FSAR Tier 2, Section 3.9.3. U.S. EPR FSAR Tier 2, Section 3.10 will be revised to provide this clarification.

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 3.10 will be revised as described in the response and indicated on the enclosed markup.

Question 03.10-26:

Follow-up to Question 03.10-04

In its letter dated February 27th, 2009, AREVA's response cited NUREG-1030 and European Utility Requirements for excluding consideration of the simultaneous occurrence of a LOCA with the SSE. NUREG-1030 is for operating plants only. Both NUREG-1030 and European Utility Requirements are not applicable to new nuclear power plants. In addition, the applicant cited several occasions where NRC had accepted the conditions that simultaneous occurrence of a LOCA and a seismic event was not required. However, the staff deems those are all for operating plants and a result of special considerations, and are not applicable to new reactors.

For new reactor applications, SRP Section 3.10 Acceptance Criteria (1)(B), Design Adequacy of Supports, Item (ii) indicates that the combined stresses of the support structures should be in accordance with the criteria specified in SRP Section 3.9.3, and Item 7 in Table I of SRP Section 3.9.3 clearly shows that the Faulted Condition (LOCA+SSE) must be satisfied.

Therefore, the applicant is requested, to commit to the SRP acceptance criteria mentioned above.

Response to Question 03.10-26:

The U.S. EPR FSAR will be revised to indicate that combined stresses (LOCA + SSE) of support structures will be in accordance with the criteria specified in SRP Section 3.9.3, Table I, Item 7.

FSAR Impact:

U.S. EPR FSAR Tier 2, Section 3.10 will be revised as described in the response and indicated on the enclosed markup.

U.S. EPR Final Safety Analysis Report Markups

3.10 Seismic and Dynamic Qualification of Mechanical and Electrical Equipment

This section addresses the seismic and dynamic qualification of mechanical, electrical, and instrumentation and controls (I&C) equipment. The equipment covered by this section includes equipment associated with systems that are essential to emergency reactor shutdown, containment isolation, reactor core cooling, and containment and reactor heat removal, or otherwise are essential in preventing significant release of radioactive material to the environment. Instrumentation needed to assess plant and environmental conditions during and after an accident, as described in RG 1.97, is addressed in Chapter 7 and Section 3.11. This includes the equipment that performs the above functions automatically, that operators use to perform the above functions manually, and for which failure can prevent satisfactory accomplishment of one or more of the above safety functions. This includes equipment in the reactor protection system (RPS), engineered safety features (ESF) Class 1E equipment, the emergency power system, and auxiliary safety-related systems and supports.

Examples of mechanical equipment included in these systems are pumps, valves, fans, and control rod drive mechanisms (CRDM). Examples of electrical and I&C equipment included are fan motors, valve operators, solenoid valves, pressure switches and electrical penetrations. This equipment is included in three different categories:

- Active mechanical equipment that is required to perform a mechanical operation during and after a seismic event, while accomplishing its safety-related functions.
- Passive mechanical equipment that is only required to maintain its structural and pressure boundary integrity during and after a seismic event.
- Instrumentation that is needed to assess plant and environs conditions during and after an accident.

As stated in NUREG-1030 (Reference 1) the simultaneous occurrence of a loss-of-coolant accident (LOCA) and a seismic event do not have to be considered. This is consistent with the European Utility Requirements (Reference 2) for light water reactor nuclear power plants. These requirements establish that a design earthquake "...is not considered as an initiating event for limiting accidents . . . such as a steam system piping break downstream of isolation valves, small break LOCAs, and a steam generator tube rupture."

Therefore, the following assumptions are applied to define the scope of the equipment requiring seismic qualification, and to confirm that the four essential safe shutdown functions (reactor reactivity control, reactor coolant pressure control, reactor coolant inventory control, and decay heat removal) can be accomplished following a safe shutdown earthquake (SSE):

- Offsite power may not be available for up to 72 hours following the earthquake.

03.10-26 →

- No other extraordinary events or accidents (e.g., LOCAs, high-energy line breaks, fires, floods extreme winds, and sabotage) are postulated to occur, other than the SSE and loss of offsite power (except that service loading combinations specified in SRP 3.9.3, Table I are considered in the pipe stress analysis and pipe support design process when required by the ASME Code required design specification.).
- The equipment to be seismically qualified includes:
 - Active mechanical equipment which operates or changes state to accomplish safe shutdown as defined in the Technical Specifications.
 - Active equipment in systems which support the operation of identified safe shutdown equipment (e.g., power supplies, control systems, cooling systems, lubrication systems).
 - Instrumentation needed to confirm that the safe shutdown functions have been achieved and are being maintained.
 - Instrumentation needed to operate the safe shutdown equipment.
 - Tanks and heat exchangers used to reach and maintain safe shutdown.
 - Cable and conduit raceways which support electrical cable for the selected safe shutdown equipment (see Section 3.7.3 and Appendix 3A).
 - Instrumentation described in RG 1.97 (see Section 3.11 for additional information regarding conformance with RG 1.97).
- The following equipment types are not identified for seismic qualification:
 - Passive equipment such as piping and filters (see Section 3.9.2, Appendix 3A, and U.S. EPR Piping Analysis and Pipe Support Design (Reference 3)).
 - Major items of equipment in the nuclear steam supply system, their supports, and components mounted on or within this equipment, such as the reactor pressure vessel, reactor fuel assemblies, reactor internals, control rods, reactor coolant pumps, steam generators, pressurizer, and reactor coolant piping (see Section 3.7.2 and Appendix 3C).
 - Radioactive waste management systems designed in accordance with RG 1.143 (see Section 3.2.1).

The information presented in this section includes:

- The seismic qualification criteria and methods employed for each category of equipment.
- The documentation of the qualification process used to demonstrate the required seismic capability.

The following GDC apply to this section:

- GDC 1 and GDC 30 as they relate to qualifying equipment to appropriate quality standards commensurate with the importance of the safety functions to be performed.
- GDC 2 and 10 CFR 50, Appendix S as they relate to designing equipment to withstand the effects of natural phenomena, such as earthquakes.
- GDC 4 as it relates to qualifying equipment as capable of withstanding the dynamic effects associated with external missiles and internally generated missiles, pipe whip, and jet impingement forces.
- GDC 14 as it relates to qualifying equipment associated with the reactor coolant boundary so that there is an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.

Compliance with the above GDC is demonstrated through the methodology described in Sections 3.10.1, 3.10.2, and 3.10.3.

Other sections that interface with this section are listed below.

- Section 3.2 defines the seismic classification of those structures, systems, and components (SSC), including their foundations and supports, that are safety-related and designated as Seismic Category I.
- Section 3.6.2 addresses the determination of rupture locations and the dynamic effects associated with postulated pipe ruptures.
- Section 3.7.3 defines the seismic and dynamic input motions for floor-, wall-, and pipe-mounted equipment.
- Section 3.9.2 defines the dynamic testing and analysis of systems, components, and equipment.
- Section 3.9.3 defines the design and service-loading combinations for Seismic Category I pressure retaining mechanical and ~~electrical~~ equipment, including the Class 1, 2, and 3 components, component supports, and core support structures identified in the ASME Boiler and Pressure Vessel Code, Section III (Reference 4). The applicable design and service loading combinations are also for seismic qualification of Seismic Category I electrical, I&C, and non-pressure retaining mechanical equipment.
- Section 3.9.6 defines the functional design, qualification, and inservice testing programs for pumps, valves, and dynamic restraints.
- Section 3.13 defines the adequacy of programs for assuring the integrity of bolting and threaded fasteners, including provisions for installation and maintenance of mounting and bolting details.

03.10-24 →