ArevaEPRDCPEm Resource

From: DUNCAN Leslie E (AREVA NP INC) [Leslie.Duncan@areva.com]
Sent: Friday, December 05, 2008 5:56 PM
To: Getachew Tesfaye
Cc: John Rycyna; Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 92, Supplement 1, FSAR Ch 13
Attachments: RAI 92 Supplement 1 Response US EPR DC.pdf

Getachew,

On November 4, 2008, AREVA NP Inc. (AREVA NP) provided a schedule for complete responses to each of the 27 questions of RAI 92. The attached file, "RAI 92 Supplement 1 Response US EPR DC.pdf" provides technically correct and complete responses to 27 of the 27 questions, as committed.

The following table indicates the respective pages in the response document, "RAI 92 Supplement 1 Response US EPR DC.pdf," that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 92 — 13.06-1	2	3
RAI 92 — 13.06-2	4	4
RAI 92 — 13.06-3	5	5
RAI 92 — 13.06-4	6	6
RAI 92 — 13.06-5	7	7
RAI 92 — 13.06-6	8	9
RAI 92 — 13.06-7	10	10
RAI 92 — 13.06-8	11	11
RAI 92 — 13.06-9	12	13
RAI 92 — 13.06-10	14	14
RAI 92 — 13.06-11	15	15
RAI 92 — 13.06-12	16	16
RAI 92 — 13.06-13	17	17
RAI 92 — 13.06-14	18	18
RAI 92 — 13.06-15	19	20
RAI 92 — 13.06-16	21	21
RAI 92 — 13.06-17	22	22
RAI 92 — 13.06-18	23	23
RAI 92 — 13.06-19	24	24
RAI 92 — 13.06-20	25	25
RAI 92 — 13.06-21	26	26
RAI 92 — 13.06-22	27	27
RAI 92 — 13.06-23	28	28
RAI 92 — 13.06-24	29	30
RAI 92 — 13.06-25	31	32
RAI 92 — 13.06-26	33	33
RAI 92 — 13.06-27	34	34

This concludes the formal AREVA NP response to RAI 92, and there are no questions from this RAI for which AREVA NP has not provided responses.

Sincerely,

(Les Duncan on behalf of)

Ronda Pederson
ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
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: WELLS Russell D (AREVA NP INC)
Sent: Tuesday, November 04, 2008 1:47 PM
To: 'Getachew Tesfaye'
Cc: 'John Rycyna'; Pederson Ronda M (AREVA NP INC); BENNETT Kathy A (OFR) (AREVA NP INC); DELANO Karen V (AREVA NP INC)
Subject: Response to U.S. EPR Design Certification Application RAI No. 92, FSAR Ch 13

Getachew,

Attached please find AREVA NP Inc.'s response to the subject request for additional information (RAI). The attached file, "RAI 92 Response US EPR DC.pdf" states that responses cannot be currently provided for the 27 questions.

The following table indicates the respective pages in the response document "RAI 92 Response US EPR DC.pdf" that contain AREVA NP's response to the subject questions.

Question #	Start Page	End Page
RAI 92 — 13.06-1	2	2
RAI 92 — 13.06-2	3	3
RAI 92 — 13.06-3	4	4
RAI 92 — 13.06-4	5	5
RAI 92 — 13.06-5	6	6
RAI 92 — 13.06-6	7	7
RAI 92 — 13.06-7	8	8
RAI 92 — 13.06-8	9	9
RAI 92 — 13.06-9	10	10
RAI 92 — 13.06-10	11	11
RAI 92 — 13.06-11	12	12
RAI 92 — 13.06-12	13	13
RAI 92 — 13.06-13	14	14
RAI 92 — 13.06-14	15	15
RAI 92 — 13.06-15	16	16
RAI 92 — 13.06-16	17	17
RAI 92 — 13.06-17	18	18
RAI 92 — 13.06-18	19	19
RAI 92 — 13.06-19	20	20
RAI 92 — 13.06-20	21	21

RAI 92 — 13.06-21	22	22
RAI 92 — 13.06-22	23	23
RAI 92 — 13.06-23	24	24
RAI 92 — 13.06-24	25	25
RAI 92 — 13.06-25	26	26
RAI 92 — 13.06-26	27	27
RAI 92 — 13.06-27	28	28

The schedule for technically correct and complete responses to the 27 questions is provided below.

Question #	Response Date
RAI 92 — 13.06-1	December 5, 2008
RAI 92 — 13.06-2	December 5, 2008
RAI 92 — 13.06-3	December 5, 2008
RAI 92 — 13.06-4	December 5, 2008
RAI 92 — 13.06-5	December 5, 2008
RAI 92 — 13.06-6	December 5, 2008
RAI 92 — 13.06-7	December 5, 2008
RAI 92 — 13.06-8	December 5, 2008
RAI 92 — 13.06-9	December 5, 2008
RAI 92 — 13.06-10	December 5, 2008
RAI 92 — 13.06-11	December 5, 2008
RAI 92 — 13.06-12	December 5, 2008
RAI 92 — 13.06-13	December 5, 2008
RAI 92 — 13.06-14	December 5, 2008
RAI 92 — 13.06-15	December 5, 2008
RAI 92 — 13.06-16	December 5, 2008
RAI 92 — 13.06-17	December 5, 2008
RAI 92 — 13.06-18	December 5, 2008
RAI 92 — 13.06-19	December 5, 2008
RAI 92 — 13.06-20	December 5, 2008
RAI 92 — 13.06-21	December 5, 2008
RAI 92 — 13.06-22	December 5, 2008
RAI 92 — 13.06-23	December 5, 2008
RAI 92 — 13.06-24	December 5, 2008
RAI 92 — 13.06-25	December 5, 2008
RAI 92 — 13.06-26	December 5, 2008
RAI 92 — 13.06-27	December 5, 2008

Sincerely,

(Russ Wells on behalf of)

Ronda Pederson

ronda.pederson@areva.com
Licensing Manager, U.S. EPR Design Certification
New Plants Deployment
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: Getachew Tesfaye [mailto:Getachew.Tesfaye@nrc.gov]
Sent: Thursday, October 09, 2008 3:52 PM
To: ZZ-DL-A-USEPR-DL
Cc: Pete Lee; Doug Huyck; Michael Miernicki; Joseph Colaccino; John Rycyna
Subject: U.S. EPR Design Certification Application RAI No. 92 (969), FSARCh. 13

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on September 26, 2008, and on October 6, 2008, 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: 9

Mail Envelope Properties (F322AA625A7A7443A9C390B0567503A1858A31)

Subject: Response to U.S. EPR Design Certification Application RAI No. 92, Supplement 1, FSAR Ch 13
Sent Date: 12/5/2008 5:55:39 PM
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From: DUNCAN Leslie E (AREVA NP INC)

Created By: Leslie.Duncan@areva.com

Recipients:
"John Rycyna" <John.Rycyna@nrc.gov>
Tracking Status: None
"Pederson Ronda M (AREVA NP INC)" <Ronda.Pederson@areva.com>
Tracking Status: None
"BENNETT Kathy A (OFR) (AREVA NP INC)" <Kathy.Bennett@areva.com>
Tracking Status: None
"DELANO Karen V (AREVA NP INC)" <Karen.Delano@areva.com>
Tracking Status: None
"Getachew Tesfaye" <Getachew.Tesfaye@nrc.gov>
Tracking Status: None

Post Office: AUSLYNCMX01.adom.ad.corp

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MESSAGE	6344	12/5/2008 5:55:59 PM
RAI 92 Supplement 1 Response US EPR DC.pdf	159161	

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

Response to

Request for Additional Information No. 92 Supplement 1

10/9/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 13.06 - Physical Security
Application Section: Tier 1, Chapter 3; Tier 2, Chapter 13.6; U.S. EPR Vital Equipment List

QUESTIONS for Reactor Security and Programs Branch (NSIR/DRP/RSPLB)

Question 13.06-1:

Tier 1, Chapter 3, Section 3.1.1: Provide descriptions of physical security features that have been considered and incorporated into the standard EPR design to protect against the design basis threats (DBT). Specifically, describe what and how security engineered systems and features, including configurations and layout of EPR foot print and access points, have been incorporated to provide, facilitate, or enhance capabilities to detection, assess, communicate, delay, and interrupt malevolent acts in accordance with adversarial characteristic associated with the DBT. The level of information in Tier I must be sufficient and stand alone to describe the standard security features incorporated into the EPR design.

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. Currently, the EPR design certification application, Tier I, Chapter 3, "Non-System Based Design Descriptions and ITAAC discussed security "Design Features" and Table 3.1-1, "Inspection, Test, Analyses, and Acceptance Criteria (4 sheet)" discussed inspection, tests, and analysis and acceptance criteria for design features. Tier 2, FSAR Chapters 13 "Conduct of Operations" do not contain supporting technical detailed security design information for the standard EPR design that supports the Tier 1, Chapter 3, generic descriptions for security "Design Features," and associated ITAAC. Although not a specific regulatory requirement, the Commission draft policy statement published in Federal Register Notice 26349, dated May 9, 2998, expects design vendors to address security for new reactors early in the design stage. Therefore, generic security systems or features relied on for protection against the DBT should be incorporated into the EPR design to the extent possible as standard design and specifications. The security related hardware or credited design features must be described in Tier 2 FSAR (Chapter 13 or other appropriate FSAR chapters) or in a referenced technical report to support the described security ITAAC.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-1:

U.S. EPR FSAR Tier 1, Section 3.1 was revised to provide additional security details in the response to RAI 42 Supplement 1, Question 14.03.12-6. The revised ITAAC are consistent with the industry standard ITAAC proposed by the NEI New Plant Security Task Force.

Technical Report ANP-10295, "U.S. EPR Security Features," (SGI) and Technical Report ANP-10296, "U.S. EPR Design Features that Enhance Security," provide additional security details beyond that of U.S. EPR FSAR Tier 1, Section 3.1.

FSAR Impact:

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

Question 13.06-2:

Tier 2, FSAR Chapter 13, Section 13.6: Provide detailed descriptions of design performance, specifications, and configurations that support the list of "Design Features" identified in Tier 1, Chapter 3, Section 3.1.1.

Include associated design basis, assumptions, and design requirements for physical protection systems for the EPR standard design. The reliability of systems incorporated should be addressed in the design basis and assumptions. Provide descriptions of analysis and evaluations in sufficient detail, where applicable, to support the design basis for security features incorporated in the standard EPR design. NRC guidance, "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007 should be considered and applied for establishing design basis for engineered physical protection features for the standard EPR design.

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Basis for the RAI is the same as previously stated in Question EPM eRAIWorkflow RAI #3238. In addition, NRC guidance, NRC guidance, "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007 should be considered and applied for establishing design basis for engineered physical protection features for the standard EPR design, are not regulatory requirements and provides the applicant with guidance on methods or approaches that the NRC staff will find acceptable for demonstrating reliability and availability of protection and determination of adequate protection.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-2:

U.S. EPR FSAR Tier 2, Section 13.6 was revised to provide additional security details in the response to RAI 42 Supplement 1, Question 14.03.12-1. Technical Report ANP-10295, "U.S. EPR Security Features," (SGI) and Technical Report ANP-10296, "U.S. EPR Design Features that Enhance Security," provide additional security details beyond that of U.S. EPR FSAR Tier 2, Section 13.6.

FSAR Impact:

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

Question 13.06-3:

U.S. EPR Vital Equipment List: Describe mitigating systems considered in the event of a loss of offsite power for the development of the vital equipment list. Following a loss of offsite power (LOOP), a loss-of-coolant accident (LOCA) via the reactor coolant pump (RCP) seals can be prevented by providing seal injection via the chemical and volume control system (CVCS), providing thermal barrier cooling via the component cooling water system (CCWS), or engaging the standstill seal. How are these mitigating systems being considered as vital equipment?

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. The evaluation and identification of vital equipment, and subsequent analysis to determined target sets, is required to establish a physical protection system that would protect against the DBT.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-3:

A loss of offsite power was considered in the development of the Vital Equipment List consistent with Assumption 6 in NUREG-1178. Loss of coolant accidents were considered and dispositioned by protecting the reactor coolant system pressure boundary. Safety-related cooling to the RCP thermal barrier is provided by the component cooling water system. The RCP seal remains intact with cooling provided. Therefore, a seal LOCA was not considered.

FSAR Impact:

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

Question 13.06-4:

U.S. EPR Vital Equipment List: Justify excluding the chiller units from the vital equipment list, given that other safety chilled water system (SCWS) components are included. The failures of SCWS chiller units, both individually and by common cause, are identified as important in the U.S. EPR probabilistic risk assessment (PRA). Provide technical basis for not including the chiller units on the vital equipment list.

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. The evaluation and identification of all vital equipment for the EPR design, and subsequent analysis to determined standard design target sets, is required to establish a physical protection system that would protect against the DBT.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-4:

The Vital Equipment List provides the active components of various systems whose operation are necessary for operation of that mitigating system. Heat exchangers for systems are generically treated as passive components, similar to piping; therefore, they are not specifically listed.

Piping and other passive components that connect pieces of vital equipment are also generically treated as vital equipment where they comprise a portion of the system pressure boundary that is required to perform the intended function. Portions of a piping system that is normally isolated by valves (e.g., pressure relief valves, check valves) are not considered vital.

FSAR Impact:

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

Question 13.06-5:

U.S. EPR Vital Equipment List: Clarify the use of the term "HVAC" (heating, ventilation, and air conditioning) in the context specific of supporting systems for identifying vital equipment. The failures of various cooling systems (e.g., CCWS, essential service water system (ESWS), and SCWS) could lead to failures of the four-train equipment. Therefore, the "HVAC" term should be defined to include all relevant support systems for subsequent development of target sets requiring physical protection against postulated DBT scenarios or treated separately in target sets.

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. The evaluation and identification of all vital equipment for the EPR design, and subsequent analysis to determined standard design target sets, is required to establish a physical protection system that would protect against the DBT.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-5:

The Vital Equipment List provides the active components of various systems whose manipulation are necessary for operation of that mitigating system. Support equipment and systems are generically treated as integral to that component's operation; therefore, they are not specifically listed.

HVAC includes the component cooler or room cooler required to maintain functionality of key components or to provide suitable environmental conditions for required personnel for up to 30 days after the event. The HVAC for a specific train or structure is comprised of the safety chilled water system and maintenance HVAC systems specific to that structure. HVAC and equipment cooling in the Reactor Building is supported by combined pairs of trains. (e.g., Common 1 is a combination of HVAC Divisions 1 and 2, and Common 2 is a combination of HVAC Divisions 3 and 4.). These are supported by the four train-specific component cooling water systems which in turn is supported by the four train specific emergency service water systems. The active components of these supporting systems meeting the assumptions in ANP-10295, Appendix A.4 are included in the Vital Equipment List.

FSAR Impact:

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

Question 13.06-6:

U.S. EPR Vital Equipment List: Discuss how dependencies between trains (i.e., situations where one failure could disable multiple redundant safety system trains) have been considered in the development of vital equipment list and subsequent analysis for standard target sets for the EPR design. Examples of dependencies include:

a. Postulated failure of HVAC in the Safeguard Building (SB) housing the operating CCWS train that may cause failure of the common header switchover, cooling to two RCP thermal barriers, and HVAC in the SB housing the other CCWS train supplying the common header (see FSAR page 19.1-37).

b. Operations and functions of motor control centers (MCC) from a minimum of two divisions to provide a primary bleed path via either the pressurizer safety valves or the severe accident depressurization valves (see FSAR page 19.1-38).

c. Operations and functions of MCCs from a minimum of two divisions to operate the main steam relief isolation valves (see FSAR page 19.1-39).

d. Operations and functions of the emergency feedwater system (EFWS) pump suctions that are interconnected via normally open valves, so the PRA assumes that failure of a single tank results in failure of all four trains of EFWS (see FSAR page 19.1-29).

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Title 10 CFR 52.48 requires the applications filed will be reviewed for compliance with the standards set out in 10 CFR Part 73. Title 10 CFR 73.1 requires that a COL applicant address or a licensee provide a high assurance of protection against the DBT. The evaluation and identification of all vital equipment for the EPR design, and subsequent analysis to determined standard design target sets, is required to establish a physical protection system that would protect against the DBT.

Note: The information addressing specific details related to security features will be safeguards information (SGI) and should be marked and protected in accordance with 10 CFR 73.21. The applicant should portion mark text in the response to request for information (RAI) as appropriate to identify SGI that reveals the specific details of security features incorporated in the EPR design. The RAI responses supplementing the DC Tier 1 document must be publicly available.

Response to Question 13.06-6:

The U.S. EPR incorporates a four safety train design. It is generically assumed in security analyses that one train may be in a maintenance outage; one train fails to actuate because of the event; and two trains are available and operational to perform their intended safety function. In the cases where a component fails and the event potentially impacts two trains, that analysis would result in assuming one train out for maintenance, two trains damaged by the event, and one train to perform its intended safety function. The impact of a single event affecting two trains is addressed because one fully functional train remains available to mitigate the event per the design.

Where the sequence includes failures to automatically swap trains, failures of equipment automatically start, or take other operator actions, manual operator action in accordance with normal, abnormal, or emergency operating procedures could correct the failure of the system to automatically swap trains and manually restore train function.

The four specific examples listed in the question are addressed below:

a. HVAC—The PRA sequence also assumes the failure of operators to take proceduralized actions to manually swap train 1 that failed to automatically swap. However, this same PRA assumption is not applied to determination of vital equipment. Operators are assumed to follow the established written procedures and manually start equipment that fail to automatically start. This manual operation action would break the PRA sequence progression and prevent fuel damage.

b. PDS—This dependency was identified by AREVA NP during our analysis of the security response to hostile actions. Actions necessary to prevent adversaries from exploiting this design were developed and are clarified in ANP-10295, Appendix C.

c. MSRIV—Two trains are required to operate and maintain the MSRIVs open. This was accounted for in the vital equipment considerations. The MSRIVs are designed to fail closed upon failure of the two MCCs that power the two solenoids for that MSIV. This makes damaging the MCCs supplying the MSRIV solenoids counter-productive to adversaries. If the electrical board or MCC supplying one of the solenoids to a MSRIV is damaged (resulting in the loss of power to the solenoid), this does not prevent remote operation or automatic actions to de-energize the other solenoid and close the MSIV. If both MCCs are damaged, the MSRIV closes, which is the safe configuration.

d. This is a duplicate question of RAI 83, Question 10.04.09-1.

FSAR Impact:

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

Question 13.06-7:

U.S. EPR Vital Equipment List: Discuss how important operator actions identified in Chapter 19 of the FSAR for mitigating progression of accident sequences are addressed in the identification of vital equipment list. Discuss how and whether the reliability and availability of needed operator actions are addressed in the development of standard EPR target sets (e.g., protected against adversaries' attempts to prevent these actions). In addition, failure of equipment manipulated during certain operator actions may not be modeled in the PRA because of comparatively high human error probabilities. Discuss how any such equipment was considered in the development of both the vital equipment list and the development of target sets requiring physical protection.

Regulatory Basis: Same as previously stated. Also see previous note regarding protection information

Response to Question 13.06-7:

Certain procedure driven operator actions are taken immediately upon confirmation of adversary penetration of the Protected Area. These actions are taken to preclude certain failure states, which may or may not also be discussed in the Probabilistic Risk Assessment (PRA). The equipment to be operated is included as vital equipment. These immediate operator actions and the associated vital equipment are included in ANP-10295, Appendix C.

Probabilistic failures to act on proceduralized operator actions assumed in the PRA are synonymous with random failures that are excluded from consideration by Assumption 7 from NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report." Operator failures to act are, for the purposes of vital area analysis, based solely on adversary intervention at the location of the operator action.

Target Sets are not considered by AREVA NP to be in the scope of the U.S. EPR design certification. Target Sets require a comprehensive evaluation of the site, including certain features to be determined by the COL applicant. Additionally, Target Sets are not required under current regulations. Although the proposed revision to 10 CFR 73 incorporates Target Sets, it is premature to include this material in design certifications before final regulations are issued.

FSAR Impact:

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

Question 13.06-8:

U.S. EPR Vital Equipment List: Discuss how safety system piping (not modeled in PRA) is addressed in the identification of vital equipment for the standard EPR design. In addition, discuss how safety system components, including those associated with control systems (e.g., communications signals) relied on for operation of safety systems, are being evaluated in the identification of vital equipment, and any subsequent analysis to establish standard target sets for the EPR design.

Regulatory Basis: Same as previously stated. Also see previous note regarding protection information.

Response to Question 13.06-8:

The Vital Equipment List provides the active components of various systems whose operation are necessary for operation of that mitigating system. Piping is treated as a passive component between active pieces of vital equipment and therefore are not specifically listed. Piping in the plant is generally not labeled as to system or purpose. Generic unlabeled piping is not quickly or easily identified by persons not intimately familiar with the facility. This treatment is consistent with the guidance in NUREG-1178, “Vital Equipment/Area Guidelines Study: Vital Area Committee Report” on the classification of unlabeled electrical cabling that connects vital electrical equipment.

Likewise, control cabling in the plant is generally not labeled as to system or purpose. Generic unlabeled control cable is not quickly or easily identified by persons not intimately familiar with the facility. This treatment is consistent with the guidance in NUREG-1178, “Vital Equipment/Area Guidelines Study: Vital Area Committee Report” on the classification of unlabeled electrical cabling that connects vital electrical equipment.

Target Sets are not considered by AREVA NP to be in the scope of the U.S. EPR design certification. Target Sets require a comprehensive evaluation of the site, including certain features to be determined by the COL applicant. Additionally, Target Sets are not required under current regulations. Although the proposed revision to 10 CFR 73 incorporates Target Sets, it is premature to include this material in design certifications before final regulations are issued.

FSAR Impact:

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

Question 13.06-9:

U.S. EPR Vital Equipment List: Revise the vital equipment list to address assumptions in NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report" that are not sufficient or not consistent with current guidance in the "Nuclear Power Plant Security Assessment Format and Content Guide," September 2007. Specifically, the following four of NUREG-1178 assumptions are inconsistent with the current guidance in the "Nuclear Power Plant Format and Content Guide" dated September 2007:

- One train of equipment (with the associated piping, water sources, power supplies, control, and instrumentation) that provides the capability to perform the functions (Reactivity control, decay heat removal, and process monitoring) that are necessary to achieve and maintain hot shutdown for a minimum of 8 hours from the time of reactor trip should be protected as vital, In addition, the major components of the reactor coolant makeup system and associated support equipment necessary to achieve this goal should be protected as vital.
- Only the power mode of reactor operation and hot standby (for PWRs) need be considered as long as all equipment designated as vital for power operation is maintained as vital in other modes.
- Off-site power is unavailable.
- Cable runs in trays and conduit need not be protected as vital unless cables necessary for safe shutdown capability are individually identifiable and the identification is reasonably accessible. However, cable terminals or junctions and areas such as cable spreading room, through which large numbers of cables pass, must be protected.

Regulatory Basis: Same as previously stated. The "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007, provides detailed guidance on the security assessment process. Appendix B Sections 7.1 (Cable identification), 7.4 (Plant Modes), and 7.12 (Offsite Power), address three of the four assumptions listed above. In addition, the Section 5.1 states the expectation that the security assessment will be risk informed. As such, current risk informed guidance uses a 24 hour mission time. Also see previous note regarding protection information.

Response to Question 13.06-9:

AREVA NP disagrees with replacing the criteria from NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report" with criteria from the "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007 (F&C Guide).

The F&C Guide describes itself on page 2 as "a method for developing the format and content of a security assessment," and the NRC staff has been clear that other methods that properly implement the regulations are also acceptable to the Staff. The F&C Guide is specific guidance on how to prepare a voluntary security assessment, and the scope of NUREG-1178 is more directly aligned with the subject of vital areas.

The applicable revision of Standard Review Plan, Section 13.6.2 "Physical Security - Design Certification," DRAFT August 2007 delineates the information required for certification and provides for voluntary submittal of additional material including a security assessment. The

F&C Guide confirms that the security assessment is voluntary and that the level of information must be appropriate to the stage of licensure. However, both the F&C Guide and NRC Commission policy is that for design certification, the facility design should demonstrate that:

- "Practicable safety and security features have been appropriately considered for integration into the design."
- "The expected result is a more robust security posture with less reliance on operational programs (human actions)."

AREVA NP developed the U.S. EPR FSAR Tier 1, Section 3.1 and U.S. EPR FSAR, Tier 2, Section 13.6 design certification material based on the required material identified in the August 2007 Draft of SRP Section 13.6.2 above as well as other regulatory guidance in effect at the time, such as NUREG-1178. At several stages prior to submitting the U.S. EPR FSAR, AREVA NP also evaluated the prudence of include a voluntary security assessment (and the associated target sets) at the design certification stage. Factors (e.g., completeness and quality of such a security assessment) were considered and included review of the draft guidance provided.

It was AREVA NP's determination, that given the degree of interaction of the security assessment with the protected area, which is a site specific feature, any comprehensive evaluation would either lack sufficient detail to be meaningful or would require a significant licensing effort on the part of COL applicants to justify deviations. Based on AREVA NP's evaluation of the value of a voluntary security assessment at the design certification stage, AREVA NP chose to assist the COL Applicants in developing a detailed and complete security assessment, which includes the site specific information for inclusion with the COL application.

Additional details are included in the response to RAI 42 Supplement 1, Question 14.03.12-6 that will include the standard design features supporting a more robust security program for the client. This material discusses the design features of the U.S. EPR that are credited as benefiting security and provides sufficient basis for concluding that the U.S. EPR has enhanced design features that provide for an improved security capability with a reduced reliance on operator action. This supplemental information is included in ANP-10296 (Public) and ANP-10295 (SGI) as a part of the response to RAI 42, Supplement 1.

FSAR Impact:

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

Question 13.06-10:

U.S. EPR Vital Equipment List, Section 3.2.1 and Section 3.2.2: Provide additional justification for the treatment of the pressure boundaries for these systems given that the failure of the reactor coolant pressure boundary and the secondary pressure boundary could impact the health and safety of the public. *Note that designating an area as vital and controlling access does not mean that its destruction of equipment located within the area can not occur.*

Regulatory Basis: Same as previously stated. The definition of vital equipment is contained in the "Nuclear Power Plant Security Assessment Format and Content Guide" Glossary and states that vital equipment is "Any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. Equipment or systems which would be required to function to protect public health and safety following such failure, destruction, or release are also considered to be vital." Also see previous note regarding protection information.

Response to Question 13.06-10:

Piping that connects pieces of equipment listed as vital equipment is also generically considered vital equipment to the extent that that portion of the system pressure boundary is required to perform the intended function. Portions of a piping system that is normally isolated (e,g., by valves, check valves) and whose failure would not significantly affect the pressure boundary of the safety-related system alignment are not considered vital.

FSAR Impact:

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

Question 13.06-11:

U.S. EPR Vital Equipment List, Section 3.2.1 and Section 3.2.3: Describe how this single failure criterion is used in the identification of vital equipment using an approach consistent with the Nuclear Power Plant Security Assessment Format and Content Guide Sections 7.5 and 7.15.

Regulatory Basis: Same as previously stated. Section 7.5 of the "Nuclear Power Plant Security Assessment Format and Content Guide)," dated September 2007, Section 7.5 provides guidance on the treatment of maintenance activities and Section 7.15 provides guidance on random failures. Also see previous note regarding protection of information.

Response to Question 13.06-11:

The U.S. EPR incorporates a four safety train design. It is generically assumed in our analysis that one train may be in a maintenance outage, one train fails to actuate due to the event, and two trains are available and operational to perform their intended safety function.

Random equipment failures are excluded from consideration by Assumption 7 from NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report." If random failures of equipment to automatically actuate were to occur, the security analyses credit manual operator action in accordance with normal, abnormal, or emergency operating procedures that would correct the failure of the system (i.e., start equipment that should have automatically actuated and manually restore function).

However, AREVA NP disagrees with replacing criteria on random failures from NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report" with criteria from the "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007 (F&C Guide). See the response to Question 13.06-9 for additional explanation.

FSAR Impact:

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

Question 13.06-12:

U.S. EPR Vital Equipment List, Section 3.2.6: In reference to an interpretation of Assumption 2, provide additional justification for the apparent exclusion of protective or mitigating capabilities associated with containment isolation as vital, given the definition of vital equipment.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-12:

NUREG-1178, "Vital Equipment/Area Guidelines Study: Vital Area Committee Report" states in Assumption 2 that "no credit is given for the protective or mitigating capabilities of the pressure vessel or the containment." During the development of the Vital Equipment List, containment isolation valves were assumed not to have isolated the system.

Containment isolation valves that meet the vital equipment definition are included in the Vital Equipment List although their isolation function is not credited.

FSAR Impact:

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

Question 13.06-13:

U.S. EPR Vital Equipment List, Section 3.0: Provide clarification on whether vital auxiliaries such as ventilation and cooling water systems are included. Clarify the treatment of support systems and the scope of safety functions that are bases for equipment selection in Section 3.3.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-13:

Auxiliaries (e.g., power, control circuitry, ventilation, cooling water) are considered an integral part of the listed vital equipment to the extent necessary to support the completion of the vital function. The support systems are included in the Vital Equipment List.

FSAR Impact:

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

Question 13.06-14:

U.S. EPR Vital Equipment List, Section 3.3.1: Clarify whether the trip sensors, protective system cabinets, diverse scram systems and other related protective system equipment are included in the element of the reactivity function that has been identified as being required to shutdown the plant. In addition, clearly state for all systems discussed in Section 3.3 the vital equipment scope (e.g., pressure retaining components, water sources, valves, pumps, power supplies, and control systems).

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-14:

Trip sensors, cabinets housing protective systems, diverse scram systems, pressure retaining components, water sources, valves, pumps, power supplies, and control systems and other related protective system equipment integral to the function of the listed vital equipment are considered vital to the extent necessary to support the completion of the vital equipment's function.

FSAR Impact:

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

Question 13.06-15:

U.S. EPR Vital Equipment List, Section 3.3: Clarify the apparent discrepancy in the statements that in Section 3.3 the Emergency Feedwater requires two trains to support the partial cooldown function and the decay heat removal function for an initial period, and Section 3.3.2, where it states that one EFW train is sufficient.

Regulatory Basis: Same as previously stated The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-15:

Two trains of EFW are required for fast cooldown (FCD) while one train is sufficient for partial cooldown (PCD). Partial cooldown is sufficient to reach hot standby and allow injection to the reactor by the MHSI system.

See EFW train success criteria for secondary heat removal, pressure boundary integrity protection, FCD, and PCD in U.S. EPR FSAR Tier 2:

- Table 19A-1—Event-Tree Headings for Initiating Event 31BDA: Loss of Divisional Emergency AC Power.
- Table 19A-2—Event-Tree Headings for ATWS: Failure to Scram Following Loss of Main Feedwater (Note 1).
- Table 19A-3—Event-Tree Headings for Initiating Event GT: General Transient.
- Table 19A-4—Event-Tree Headings for Initiating Event IND SGTR: Induced Steam Generator Tube Rupture.
- Table 19A-12—Event-Tree Headings for Initiating Event LBOP: Loss of Balance of Plant Closed Loop Cooling Water or Auxiliary Cooling Water.
- Table 19A-14—Event-Tree Headings for Initiating Event LOC: Loss of Main Condenser.
- Table 19A-15—Event-Tree Headings for Initiating Event LOCCW: Loss of CCWS or ESWS.
- Table 19A-16—Event-Tree Headings for Initiating Event LOMFW: Loss of Main Feedwater.
- Table 19A-17—Event-Tree Headings for Initiating Event LOOP: Loss of Offsite Power.
- Table 19A-19—Event-Tree Headings for Initiating Event MSSV: Spurious Opening of Main Steam Safety Valve.
- Table 19A-20—Event-Tree Headings for Initiating Event SGTR: Steam Generator Tube Rupture.
- Table 19A-21—Event-Tree Headings for Initiating Event SLBI: Steam-Line Break Inside Containment.
- Table 19A-22—Event-Tree Headings for Initiating Event SLBO: Steam-Line Break Outside Containment.

- Table 19A-23—Event-Tree Headings for Initiating Event SBLOCA: Small Loss-of-Coolant Accident (Note 2).
- Table 19B-1—Event-Tree Headings for Initiating Event IE LOCA: LOCA During Shutdown State C.
- Table 19B-3—Event-Tree Headings for Initiating Event IE RHR: Loss of RHR During Shutdown State C.
- Table 19B-5—Event-Tree Headings for Initiating Event IE ULD: Uncontrolled Level Drop During State CB.

Note 1: One train of EFW can feed 2 Steam generators so Table 19A-2 requires one EFW train to supply water to 2 steam generators.

Note 2: Maintaining a safe configuration and Partial Cooldown requires 1 EFW train. Fast Cooldown requires two EFW trains.

Degraded steam generator tubes were not considered because this is equivalent to a random event and random events are excluded from evaluation. In all cases, all four steam generators were considered available.

In all cases considered, one train of EFW is sufficient to reach and maintain hot standby with partial cooldown. FCD requires two trains of EFW in some cases, but FCD is beyond the required safe conditions considered for vital equipment evaluations. Operator and emergency response organization actions are credited to refill EFW suction sources as needed for long term operations.

FSAR Impact:

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

Question 13.06-16:

U.S. EPR Vital Equipment List, Section 3.3.4: Describe how the Station Blackout Event (SBO) event results in a complete **survivable** set of vital equipment, on the assumption that the reactor coolant makeup is not required to maintain the RCS inventory based on the SBO. Demonstrate that other initiating events such as main steam line breaks and loss of coolant accidents are either addressed or excluded because a design feature makes access to these systems beyond the capabilities of potential DBT adversary.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-16:

Station blackout (SBO) events are discussed in multiple locations in the U.S. EPR FSAR. The SBO response is discussed in U.S. EPR FSAR Tier 2, Section 8.4. During a loss of offsite power event, the emergency diesel generators are expected to start and provide sufficient power to each of the four trains to perform necessary safety functions. The SBO diesel generators will start to provide supplemental power to support systems not powered by the emergency diesels. Should the emergency diesels fail to start, the SBO diesel generators will power the emergency buses for divisions 1 and 4 as an alternate feed. Manual alignment to divisions 2 and 3 is also possible. After this reconfiguration, the necessary ECCS equipment and supporting equipment, including CVCS make-up and seal injection, CCWS, and ESW, is available. This alignment is shown in U.S. EPR FSAR Tier 2, Figure 8.3-2 (Sheet 1 of 3).

Main steam line breaks and loss of coolant accidents were excluded based on physical barriers or inclusion within the Vital Equipment List as requiring protection. Control of access to reactor coolant pressure boundary and portions of the main steam system preclude failures in these systems.

FSAR Impact:

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

Question 13.06-17:

U.S. EPR Vital Equipment List, Section 3.3.18: Clarify as to whether all equipment contained in the identified vital areas is considered to be vital equipment. Provide a complete list of vital equipment and a complete list of vital areas. Currently, the application identifies vital areas but does not identify, in all cases, the associated vital equipment and the associated safety function(s).

Regulatory Basis: Same as previously stated. The definition of a vital area is “any area which contains vital equipment (10 CFR 73.2). By identifying vital areas without identifying the associated equipment/function it becomes difficult to understand the bases for including or excluding a given area. Also see previous note regarding protection information.

Response to Question 13.06-17:

All equipment contained within the identified vital areas is not vital equipment. All vital equipment is in a Vital Area, and all equipment necessary to support the function of the vital equipment is in a Vital Area. However, there are components that do not meet the definition of vital equipment that are also located in Vital Areas.

The Vital Equipment List contains the list of equipment whose active function is required to prevent damage to irradiated fuel. Passive equipment that supports the operation of the listed vital equipment (e.g., piping, manual valves, pressure relief valves, check valves, control cable, power cables, cable trays, structures) are included in vital areas.

FSAR Impact:

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

Question 13.06-18:

U.S. EPR Vital Equipment List, Section 3.3.9: Clarify whether the SBO diesels are considered to be vital and should be included on the vital equipment list. If not vital equipment, the SBO diesels should be considered to be unavailable when developing the target set analysis.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-18:

Identification that equipment is or is not vital equipment in a publicly accessible document is contrary to 10 CFR 73.21; therefore, no specific public response can be made. However, for clarity, supplemental information will be included in ANP-10295 (SGI), Appendix A that clarifies whether the SBO diesels generators are or are not considered Vital Equipment.

The preliminary Target Set Analysis activities for the U.S. EPR are based on NRC endorsed industry guidance contained in NEI 03-11 “Guidance for the Preparation and Conduct of Force-on-Force Exercises.” The U.S. EPR conforms to the NEI 03-11 guidance for inclusion of systems in the preliminary Target Sets.

Target Sets are not considered by AREVA NP to be in the scope of the U.S. EPR design certification. Target sets require a comprehensive evaluation of the site, including certain features to be determined by the COL applicant. For this reason, the development of U.S. EPR Target Sets is preliminary and must be finalized only after certain details on the COL applicant features are available. Additionally, Target Sets are not required under current regulations. Although the proposed revision to 10 CFR 73 incorporates Target Sets, it is premature to include this material in design certifications before final regulations are issued.

FSAR Impact:

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

Question 13.06-19:

U.S. EPR Vital Equipment List, Appendix A: Provide clarification on whether vital equipment list include or does not include the EDG fuel oil tanks that enable the intended functions.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-19:

Identification that equipment is or is not vital equipment in a publicly accessible document is contrary to 10 CFR 73.21; therefore, no specific public response can be made. However, for clarity, supplemental information will be included in ANP-10295 (SGI), Appendix A that clarifies whether the EDG fuel oil tanks are or are not considered vital equipment.

FSAR Impact:

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

Question 13.06-20:

U.S. EPR Vital Equipment List: Describe the operator assumptions used in the identification of vital equipment including any credited actions that were used to screen equipment from the vital equipment list.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-20:

Certain immediate operator actions are taken per procedure immediately upon confirmation of an adversary penetration of the Protected Area. These actions are taken to preclude certain failure states which may or may not be discussed in the Probabilistic Risk Assessment. The equipment to be operated is included as vital equipment. These immediate actions are included in ANP-10295 (SGI), Appendix C.

FSAR Impact:

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

Question 13.06-21:

U.S. EPR Vital Equipment List: Confirm that equipment included in the significant internal events cutsets as described in the EPR FSAR Section 19 are addressed. Provide discussion of how PRA insights are addressed or used to develop and identify vital equipment.

Regulatory Basis: Same as previously stated. The "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007, provides detailed guidance. Appendix B Section 5.1.1 states that risk insights should be considered in the development of target sets including the key elements of the analysis: initiating event analysis, accident sequence analysis, success criteria, system analysis, human reliability analysis, internal flooding analysis and fire analysis. Also see previous note regarding protection of information.

Response to Question 13.06-21:

The assumptions used to incorporate Probabilistic Risk Assessment related sequences into the Vital Equipment List are presented in ANP-10295, Section A.5.

FSAR Impact:

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

Question 13.06-22:

U.S. EPR Vital Equipment List: Discuss how PRA flood scenarios will be or have been considered in the development of the list of vital equipment (i.e., potential flood sources, flood barriers, operator actions). Specifically, Section 19.1.5.2.1.3 of the AREVA "U.S. EPR Final Safety Analysis Report," described two internal flooding scenarios: (1) of a flood in the Reactor Building annulus that propagates to Safeguards Building (SB) 2 or 3, that does not specify the flood source but indicates the importance of the doors between the annulus and the Safeguard Buildings and the operator action to isolate the flood source; and (2) a flood in SB1 could disable the Division 1 running Component Cooling Water (CCW) train and the corresponding switchover valves, thereby disabling a switchover to the CCW standby train, where a loss of Division 1 may results in the failure of cooling to Division 2 SCWS chillers and cooling to two-out-of-four OCWS chillers.

Regulatory Basis: Same as previously stated. The "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007, provides detailed guidance. Appendix B Section 5.1.1 states that risk insights should be considered in the development of target sets including the key elements of the analysis: initiating event analysis, accident sequence analysis, success criteria, system analysis, human reliability analysis, internal flooding analysis and fire analysis. Also see previous note regarding protection of information.

Response to Question 13.06-22:

Internal flooding is a random failure and is not considered in determination of vital equipment per NUREG-1178.

The PRA flood scenarios listed in U.S. EPR FSAR Tier 2, Table 19.1-41 were evaluated to verify that, based on the assumptions outlined in our response to Question 13.06-21, the flooding scenarios listed in U.S. EPR FSAR Tier 2, Table 19.1-41 were either bounded by generic Vital Areas (those listed as vital areas without specific equipment being identified), were invalidated by immediate operator actions specified in ANP-10295 (SGI), Appendix C, or were bounded by equipment on the Vital Equipment List.

In addition, the U.S. EPR is a four safety train design. It is generically assumed that one train is in a maintenance outage, one train fails to actuate due to the flooding, and two trains are available and operational to perform their intended safety function.

In the case of failure to automatically swap trains, manual operator action in accordance with normal, abnormal, or emergency operating procedures could correct the failure of the system to automatically swap trains and manually restore train function.

FSAR Impact:

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

Question 13.06-23:

U.S. EPR Vital Equipment List: Clarify whether all EFWS piping is considered vital equipment. In Section 19.1.5.2.2.2 of the AREVA "U.S. EPR Final Safety Analysis Report," states that a break in the emergency feedwater system (EFWS) could potentially affect all four divisions of the EFWS since the four EFW tanks are cross-connected and if not isolated could all drain through the same break. .

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-23:

Not all EFWS piping is considered vital. The criteria provided in the response to Question 13.06-21 clarifies the methodology in determining which portions are considered vital.

FSAR Impact:

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

Question 13.06-24:

U.S. EPR Vital Equipment List: Discuss how PRA fire scenarios have been considered in the development of the list of vital equipment (i.e., potential flood sources, flood barriers, operator actions). Specifically, Section 19.1.5.3.2.3 of the AREVA "U.S. EPR Final Safety Analysis Report," describes significant fire sequences of the following:

- A fire in SB 1 could result in a failure of CCW Division 1 and the corresponding switchover valves, thereby disabling a switchover to the CCW standby train. The loss of Division 1 results in the failure of cooling to Division 2 SCWS chillers and cooling to two out of four OCWS chillers. Therefore, a fire in SB1 could result in a loss of two divisions. The same is true for SB4.
- A fire in the switchgear room of SB 1 or SB 4 directly results in the failure of the primary bleed function. In order to succeed, the bleed function requires either three out of three PSRVs to open, which requires the four electrical divisions, or one out of two SADVs to open, which requires Division 1 and Division 4. A fire in the switchgear room of SB4, therefore, prevents both combinations.

Regulatory Basis: Same as previously stated. The "Nuclear Power Plant Security Assessment Format and Content Guide," dated September 2007, provides detailed guidance. Appendix B Section 5.1.1 states that risk insights should be considered in the development of target sets including the key elements of the analysis: initiating event analysis, accident sequence analysis, success criteria, system analysis, human reliability analysis, internal flooding analysis and fire analysis. Also see previous note regarding protection of information.

Response to Question 13.06-24:

Primary depressurization is accomplished by the vital equipment specified. Fires and primary feed and bleed were excluded under Assumption 7 of NUREG-1178 on random failures

PRA fire scenarios (U.S. EPR FSAR Tier 2, Table 19.1-66) were evaluated to ensure that, given the assumptions outlined in our response to Question 13.06-21, the fire scenarios listed in U.S. EPR FSAR Tier 2, Table 19.1-66 were either bounded by generic Vital Areas (those listed as vital areas without specific equipment being identified), were invalidated by immediate operator actions specified in ANP-10295 (SGI), Appendix C, or were bounded by equipment on the Vital Equipment List.

In addition, the U.S. EPR is a four safety train design. It is generically assumed that one train is in a maintenance outage, one train fails to actuate due to the fire, and two trains are available and operational to perform their intended safety function. In cases where a fire isolation feature fails and fire potentially impacts two trains, that analysis would still result in assuming one train out for maintenance, two damaged by fire (or failure to automatically swap trains), and one train to perform its intended safety function.

In the case of failure to automatically swap trains, manual operator action in accordance with normal, abnormal, or emergency operating procedures could correct the failure of the system to automatically swap trains and manually restore train function.

FSAR Impact:

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

Question 13.06-25:

U.S. EPR Vital Equipment List: Describe in detail the process for how AREVA arrive at a final and comprehensive list of vital equipment for the standard design. Provide detailed descriptions of the process used and how it provides assurance to identify the vital equipment and improve the transparency between the sections of the vital equipment document.

The discussion of vital equipment is provided in descriptions of safety functions (Section 3.0), equipment list development assumptions (Section 3.1), plant configuration assumptions (Section 3.2), and vital equipment selection (Section 3.3), and a listing of vital equipment (Appendix A). The safety functions introduced in Section 3.0 are often not associated with the systems in Section 3.3. The Section 3.3 system discussions appear to contain the bases for inclusion or exclusion of a system or sub-system; however, definitive statements are often not provided (e.g., therefore these breakers are included on the vital equipment list). Section 3.0 states that the Vital Equipment List is contained in Appendix A. However, Section 3.3.16 contains a list of electrical buses identified as vital and that is not included in the Appendix A. Section 3.3.18 contains vital areas that are stated as including areas that "in some cases do not have specific KKS identifiers and were not included in the Appendix A table." The discussions do not provide a description of the functions and type of equipment in these areas. As a result, the staff cannot verify that a complete and accurate list of vital equipment has been identified. The current description and discussions are less than adequate for demonstrating assurance and comprehensiveness of the process for arriving at the final list of vital equipment and demonstrate the connectivity between the various sections of the document.

Regulatory Basis: Same as previously stated. The definition of vital equipment includes any equipment, system, device, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation (Nuclear Power Plant Security Assessment Format and Content Guide – Glossary). Also see previous note regarding protection of information.

Response to Question 13.06-25:

NUREG-1178 was used to provide the conditions under which the vital equipment was selected. The next review step was to identify equipment required to meet the assumptions of NUREG-1178. This was aided by previous work to identify a safe shutdown list. The safe shutdown list only considered safety-related equipment to support BTP 5-4 requirements. Thermal/hydraulic and safety analysis calculations were reviewed to verify equipment selected was appropriate and capable of meeting the required end state. In addition, the appropriate system description documents (SDD), electrical load listing, electrical one-line diagrams, and P&IDs were used to verify the selected equipment capabilities and features. Supporting systems were identified based on interface documents and were included in the Vital Equipment List. Finally, general arrangement documents along with SDDs were used to identify equipment physical location.

The electrical buses identified electrically support the vital equipment identified. Those vital areas that did not have "specific KKS identifiers" address support areas (e.g., main control room) or areas that have other capabilities (e.g., communications). These types of areas are based on the assumptions identified in NUREG-1178.

FSAR Impact:

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

Question 13.06-26:

U.S. EPR Vital Equipment List: Provide plan views and side views to graphically present boundaries of vital areas that would be establish a standard for the EPR design. Where applicable, design schematics, facility layout, and equipment diagrams already provided in the various FSAR chapters should be referenced.

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Also see previous note regarding protection of information.

Response to Question 13.06-26:

Technical Report ANP-10295 (SGI) provides plan views and side views to graphically present boundaries of vital areas.

FSAR Impact:

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

Question 13.06-27:

U.S. EPR Vital Equipment List: Describe how and whether the identified list of vital equipment will be updated to reflect changes to plant systems, configurations, and/or EPR design. Specifically, how will the vital equipment list dated September 2007 be updated to reflect subsequent information developed in topical or technical reports (ANP-010264NP, ANP10291P, GSI191, and others), updated to PRA information or insights, and reflect the updates to FSAR that could determine or affect both the identification/completeness and the locations of vital equipment?

Regulatory Basis: Subpart B of 10 CFR 52, § 52.47, requires that information submitted for a design certification must include performance requirements and design information sufficiently detailed to permit the preparation of acceptance and inspection requirements by the NRC, and procurement specifications and construction and installation specifications by an applicant. Also see previous note regarding protection of information.

Response to Question 13.06-27:

The updated Vital Equipment List has been incorporated into Technical Report ANP-10295 (SGI). Through the design certification process, AREVA NP will periodically review, and if necessary, update ANP-10295 (SGI) to maintain consistency with other configuration information provided. Updates to ANP-10295 (SGI) will be provided to the NRC.

FSAR Impact:

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