ArevaEPRDCPEm Resource

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Sent: Wednesday, August 05, 2009 2:02 PM
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Subject: U.S. EPR Design Certification Application RAI No. 260 (2569, 2714, 3084, 3181, 2776, 3262), FSAR Ch. 14
Attachments: RAI_260_CQVP_2569_2714_SBPA_3084_SEB2_3181_EMB2_2776_CCIB_3262.doc

Attached please find the subject requests for additional information (RAI). A draft of the RAI was provided to you on July 14, 2009, and on August 3, 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,
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Hearing Identifier: AREVA_EPR_DC_RAIs
Email Number: 713

Mail Envelope Properties (C56E360E9D804F4B95BC673F886381E71FBDD561CA)

Subject: U.S. EPR Design Certification Application RAI No. 260 (2569, 2714, 3084, 3181, 2776, 3262), FSAR Ch. 14
Sent Date: 8/5/2009 2:02:21 PM
Received Date: 8/5/2009 2:02:22 PM
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Files	**Size**	**Date & Time**
MESSAGE	795	8/5/2009 2:02:22 PM
RAI_260_CQVP_2569_2714_SBPA_3084_SEB2_3181_EMB2_2776_CCIB_3262.doc	89594	

Options
Priority: Standard
Return Notification: No
Reply Requested: No

Sensitivity: Normal
Expiration Date:
Recipients Received:

Request for Additional Information No. 260 (2569,2714,3084,3181,2776,3262), Revision 0

8/05/2009

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 14.02 - Initial Plant Test Program - Design Certification and New License Applicants
SRP Section: 14.03 - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.02 - Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria

Application Section: SRP 14.02

QUESTIONS for Quality and Vendor Branch 1 (AP1000/EPR Projects) (CQVP)
QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)
QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)
QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)
QUESTIONS for Construction Inspection and Allegations Branch (CCIB)

14.02-99

In RAI 14.02-77 the NRC staff requested that AREVA revise Test #033 to add specific acceptance criteria by which to verify the integrity of the feedwater piping, supports, and sparger. In its response, the applicant stated that the evaluation of the acceptance criteria contains both a quantitative and a qualitative component and described the attributes of both of these components. However, the applicant also stated that it would not change the FSAR as a result of this question. For completeness and accuracy, the NRC staff requests that the applicant include its description of the qualitative and quantitative acceptance criteria to test abstract #033 in the following manner:

5.1 Perform a visual inspection consisting of both a quantitative and qualitative evaluation of feedwater piping, supports, and sparger and determine if the integrity of components has not been violated with performance of EFWS initiation testing.

5.1.1 The quantitative component of the evaluation is a post-test evaluation of the SG sparger for visual damage. The inspection will look for cracked welds and inspect the sparger by comparing as-built dimensions to post-test dimensions. Any dimensional differences will be evaluated. The specific allowable dimensional differences are not typically specified in the SG design package and are evaluated on a case-by-case basis if differences are noted.

5.1.2 The qualitative component evaluates noise and vibration. The source of noise and vibration may indicate EFW line voiding or two phase flow and can lead to future sparger degradation if not corrected.

14.02-100

In RAI 14.02-78 the NRC staff requested that AREVA revise Test #042 to give more specific information on the design specifications for the turbine building crane and include a reference to the appropriate FSAR section that provides the requisite acceptance criteria. In its response, the applicant stated that test abstract #042 was included because the turbine building (TB) crane can be used to handle TB components or containers of radioactive waste following a steam generator (SG) tube leak. Additionally the applicant stated that the TB crane is rated to handle the heaviest TB component, which is the low pressure turbine or the main generator stator. Therefore, the TB crane acceptance criteria and vendor will be selected based upon the selection of the steam turbine and main generator vendor. Finally, the applicant also stated that it would not change the FSAR as a result of this question. Consistent with the response provided, the NRC staff requests that the applicant revise acceptance criteria 5.1 (or the appropriate FSAR section) to include a provision that the TB crane be rated to handle the heaviest TB component, either the Low Pressure Turbine or the main generator stator.

14.02-101

In RAI 14.02-32 the NRC staff requested that the applicant revise the acceptance criteria section of each test abstract to include explicit, measurable criteria (e.g., values, prescribed limits, or measurable parameters) from the relevant EPR FSAR section(s) that establish the functional adequacy of the SSCs and design features tested, and that provide a direct correlation to the test objective(s) being effectively met. In its response, the applicant proposed to revise Section 14.2.12.3.4, “Containment Isolation Valves (Test #027)”, to include acceptance criteria 5.2.2 referencing FSAR Table 14.3-2, Item 2-14; however, Item 2-14 does not exist in Table 14.3-2. Therefore, the staff requests that the applicant clarify its response accordingly.

14.02-102

In RAI 14.02-64 the NRC staff requested that the applicant revise Table 1.9-2 to include use of RG 1.20 during startup vibration tests or provide justification for the exception to RG 1.20. In its response, the applicant proposed to revise Table 1.9-2, Table 1.8-2, Section 3.9.2.4.1, Section 14.2.7 and Section 14.2.12 (Tests #029, #066 and #164) to include use of RG 1.20. However, in the proposed revision to FSAR Tier 2 Section 14.2.12.13.4, “Pre-Core Reactor Internals Vibration Measurements (Test #164)," the test objective is still not clear as written. Therefore, the staff requests that the applicant revise the Objective for test abstract #164 so that demonstrating that the reactor internal vibration is within design limits is clearly identified as a test objective.

14.02-103

In RAI 14.02-81 the NRC staff requested that the applicant revise Test #107 to give more specific information on the manufacturer design specifications of the Auxiliary Steam Generating System (ASGS) and to include a reference to the applicable section

in the FSAR. In its response to this question the applicant stated that the information requested about the manufacturer design specifications depends on the selection of the auxiliary steam boiler vendor, which occurs later in the design process. However, based on the applicant's stated purpose of the ASGS to provide gland steam for the turbine seals and to allow a gradual power reduction during normal conditions, bounding acceptance criteria such as the system's ability to provide a certain steam pressure, temperature, and flow rate should be known prior to the selection of a vendor. Therefore, the staff requests that the applicant include under the acceptance criteria in test abstract #107 either the requisite bounding system performance criteria or the FSAR section for the Auxiliary Steam Generating System that provides the bounding system performance criteria .

14.02-104

In RAI 14.02-32 the NRC staff requested that the applicant revise the acceptance criteria section of each test abstract to include explicit, measurable criteria (e.g., values, prescribed limits, or measurable parameters) from the relevant EPR FSAR section(s) that establish the functional adequacy of the SSCs and design features tested, and that provide a direct correlation to the test objective(s) being effectively met. In its response to this question the applicant proposed to revise Section 14.2.12.9.6, "Reactor Coolant Drain Tank (Test #096)", which incorrectly refers to FSAR Section 9.3.4, in Test Methods section 3.2 and Acceptance Criteria section 5.1 for design requirements for the RCDT. Instead, Section 14.2.12.9.6 should refer to FSAR Section 9.3.3. Additionally, the staff recommends that the applicant include test abstracts #096, "Reactor Coolant Drain Tank," and #097, "Equipment Drain Tank," in FSAR Section 9.3.3 for completeness and accuracy.

14.02-105

In RAI 14.02-32 the NRC staff requested that the applicant revise the acceptance criteria section of each test abstract to include explicit, measurable criteria (e.g., values, prescribed limits, or measurable parameters) from the relevant EPR FSAR section(s) that establish the functional adequacy of the SSCs and design features tested, and that provide a direct correlation to the test objective(s) being effectively met. In its response, the applicant proposed to revise Section 14.2.12.11.3, "Boron Concentration Measurement System (Test #126)", to modify the wording of the Objectives under section 1.2 from "verify electrical independence" to "to demonstrate electrical independence." For consistency with other proposed test abstract revisions, the NRC staff requests that the applicant make the following additional revisions to test abstract #126:

1. Revise Test Methods section 3.9 to include the following:
   "Check electrical independence and redundancy of power supplies for safety-related functions by selectively removing power and determining loss of function."

2. Revise Acceptance Criteria section 5.3 to include the following:
   "Verify that safety-related components meet electrical independence and redundancy requirements."

14.02-106

In RAI 14.02-69, the NRC staff requested that AREVA provide more detail as to the function of the self-testing feature described in FSAR Section 14.2.12.12.7, “Radiation Monitoring (Test #143),” as well as how it ensures that the monitor meets the acceptance criteria in Chapter 7 and 12 of the U.S. EPR FSAR. The applicant included the following information in its response to question 14.02-69:

“The U.S. EPR digital radiation monitoring system (RMS) instrumentation and control includes self-testing features and diagnostics that allow early detection of failures. The tests and inspections of the RMS include checks, calibrations, and functional tests of the individual instrumentation channels which can be performed during power operation or refueling. In addition, the RMS subsystems and components incorporate features for periodic and unscheduled maintenance, repair, and inspection.

The purpose of these system inspection and maintenance capabilities is to minimize the occurrence of system faults and to increase RMS system availability. Inspection intervals depend on the local situation and the working condition of the RMS. If a subsystem or component of the RMS is unavailable or removed for maintenance, inspection or repair, the ability of the redundant divisions to perform their safety-related functions is not impaired.

Access to the internally set parameters (e.g., calibration factors, alarm thresholds, and analog output ranges) is prohibited while the instrument is in operation. However, a dedicated portable test computer allows access to the internal parameters when the RMS is removed from service, and the test procedures described above are done with the help of this test computer. While the instrument is removed from service for testing, maintenance, or repair, it is put in a test mode that makes any output signal or alarm invalid.”

The staff has determined that this information is necessary to fully describe the RMS design and functional features in the U.S. EPR. Therefore, the NRC staff requests that the applicant add the information provided in its response to question 14.02-69 to the FSAR in either sections 7.1.1.5.5 or 12.3.4, accordingly. Additionally, the staff request that the applicant revise FSAR Section 14.2.12.12.7, acceptance criteria 5.2, to include Table 11.5-1, and Table 12.3-3.

14.02-107

The NRC staff requests that the applicant revise the prerequisite section of U.S. EPR FSAR Section 14.2.12.11.18, “Radiation Monitoring (Test #143),” to include the following:

a. Revise prerequisite item 2.1 to state “Construction Activities on the radiation monitoring system have been completed with all radiation monitors positioned in accordance with table 12.3-3 of the U.S. EPR FSAR.”

b. Revise prerequisite item 2.7 to state "Verify proper radiation monitoring system alarm set points, operation, control and indication functions."

14.02-108

The NRC staff requests that the applicant make the following revisions to the US EPR FSAR section 14.2.12.9.11, Station Blackout Diesel Generator Set (Test #101):

a. a. Change the title of the test abstract to “Station Blackout Diesel Generator Mechanical (Test #101)” for completeness and accuracy with the title in section 14.2.12.9.12, Station Blackout Diesel Generator Electrical (Test #102).

b. Add the Station Blackout Diesel Generator crankcase ventilation system to the prerequisites (2.0) section of test abstract #101.

c. Include the SBODG electrical system to the acceptance criteria section (5.0), since prerequisite 2.2 of test abstract #101 requires the “SBODG system instrumentation has been calibrated and is functional for performance of the following test.”

14.02-109

In Section 14.2.12.9.12, “Station Blackout Diesel Generator Electrical (Test #102),” the acceptance criteria item 5.1 states “The SBODG electrical system meets the design requirements of FSAR section 8.4.” The NRC staff requests that the applicant revise acceptance criteria item 51 to state the following; "The SBODG electrical and I&C systems meet design and reliability requirements (refer to sections 7.4.1, 8.4, and 8.4.1.4)."

14.02-110

The NRC staff requests that the applicant make the following revisions to the US EPR FSAR section 14.2.12.9.14, Emergency Diesel Generator Set (Test #104):

a. Change the title of the test abstract to “Emergency Diesel Generator Mechanical (Test #104)” for completeness and accuracy with the title in section 14.2.12.9.15, "Emergency Diesel Generator Electrical (Test #105).

b. Include the demonstration of the alternate feed connection capability between divisions (used when one EDG is inoperable or in maintenance) as one of the objectives or justify its exclusion.

c. Add the EDG crankcase ventilation system to the prerequisites section of test abstract #104.

d. Revise item 3.5 of test abstract #104 to include "without any failures."

e. Include sections 8.4.1 and 7.3.1.2.12 of the FSAR to the acceptance criteria section, since portions of the electrical and I&C systems are being tested through this test abstract.

14.02-111

The NRC staff requests that the applicant make the following revisions to the US EPR FSAR section 14.2.12.9.15, Emergency Diesel Generator Electrical (Test #105):

a. Add to test method item 3.1, which requires a "demonstration of the control logic and controls including the EDG sequencer and response to ESF actuation signals" to also include a “demonstration of the EDG load carrying capability with the alternate feed connected between divisions (when one EDG is inoperable).

b. Include an item in the prerequisite section that requires the “emergency diesel generator demonstration should be performed one at a time”.

c. Change item 3.9.3 of test abstract #105 to change the “90% to 100%” to “95% to 100%”.

d. Add section 7.3.1.2.12 of the FSAR to the acceptance criteriasection, since the test abstract verifies EDG alarms, interlocks and control functions.

14.02-112

The NRC staff requests that the applicant revise test method item 3.3 in Section 14.2.12.10.1, “Switchyard and Preferred Power (Test #108),” to state the following; "Verify operation and redundancy of the switchyard 125 Vdc auxiliary supply system and its associated controls, alarms and batteries."

14.02-113

In Section 14.2.12.10.2, “Main Generator (Test #109),” test method item 3.4 verifies the operation of the generator circuit **breaker [**emphasis added], which implies a single circuit breaker operation. Since the operation of two circuit breakers are required to isolate plant power output, the staff requests that the applicant revise the test abstract accordingly. Additionally, this test abstract should address a single failure of the circuit breakers (i.e., stuck breaker cases) to verify that the backup protection scheme works.

14.02-114

The US EPR FSAR item 8.3.2.4.1 Battery Acceptance Testing (page 8.3-52) states that battery acceptance testing is conducted in accordance with Reference 39 (i.e., IEEE Std. 450-2002, “IEEE Recommended Practice for Maintenance, Testing and Replacement of Vented Lead-Acid batteries for Stationary Applications”) as supplemented by RG 1.129, “Maintenance, Testing, and Replacement of Vented Lead-Acid Storage Batteries for Nuclear Power Plants.” Although the staff endorsed the aforementioned IEEE standard in the RG 1.129, the staff took a few exceptions in regulatory positions. The NRC staff requests that the applicant revise item 3.1a of section 14.2.12.10.3, "Class 1E Uninterruptible Power Supply (Test #110)", and section 14.2.12.10.4, "Non-Class 1E Uninterruptible Power Supply (Test #111)", to reflect RG 1.129 as the acceptance criteria rather than IEEE standard 450-2002.

14.02-115

The NRC staff requests that the applicant clarify the following aspects to the US EPR FSAR section 14.2.12.10.9, 6.9 kV Emergency Power Supply System (Test #116):

a. The objectives section of test abstract #116 describes testing the power supply from either normal or alternate source, but not the automatic bus transfer scheme. Clarify whether this test involves an automatic bus transfer scheme from normal to alternate power supplies.

b. Clarify whether test abstract #116 includes the alternate feed connection capability between divisions (i.e., used when one EDG is out on maintenance).

c. The U.S. EPR FSAR states that EDG has no load sequencers (i.e., timing relays), since this will be performed by controlling the placement of loads onto the respective EPSS at programmed time intervals by the protection system (PS). Clarify what is being tested in item 3.8, of section 14.2.12.10.9, "6.9 kV Emergency Power Supply System (Test #116)", for the US EPR EDG load sequencing.

d. Clarify what type of under-voltage (loss of voltage or degraded voltage) is being tested in items 3.5 and 4.3 of test abstract #116.

14.02-116

The NRC staff requests that the applicant revise the US EPR FSAR section 14.2.12.10.11, 13.8 kV Normal Power Supply System (Test #118) to include an additional objective that corresponds with acceptance criteria 5.2 relative to safety-related components meeting electrical independence and redundancy requirements. In addition, the staff requests that the applicant clarify how (i.e., test method) the automatic bus transfer scheme between normal and alternate power supplies is being tested under this test abstract.

14.02-117

The NRC staff requests that the applicant revise the test methods of US EPR FSAR section 14.2.12.10.12, "6.9 kV Normal Power Supply System (Test #119), to include the following:

a. Revise test method item 3.1 to state the following: "Demonstrate the operation and functionality of the 480 Vac source and feeder circuit breaker (isolation devices) to locally and remotely isolate class 1E and non-class 1E systems."
b. Re-insert test method item 3.6, which was removed by the applicant in response to RAI 144.

14.02-118

The emergency lighting system provides lighting for operation of safety-related equipment for implementing plant safe shutdown, firefighting, and access routes to the main control room (MCR) and remote shutdown station (RSS). US EPR FSAR section 14.2.12.10.8, Emergency

Lighting System (Test #115), Test Method 3.6 needs to be revised to include verification of RSS emergency lighting.

14.02-119

The NRC staff requests that the applicant revise the title of US EPR FSAR section 14.2.12.10.16, 12-Hour Accident Uninterruptible Power Supply (Test #123), to “12-Hour Uninterruptible Power Supply (Test #123). Additionally, the staff requests that the applicant revise test abstract #123 to include meggering and visual inspection checks of buses and equipment to the prerequisite section.

14.02-120

The NRC staff requests that the applicant revise the test methods section of US EPR FSAR Section 14.2.12.10.16, “12-Hour Accident Uninterruptible Power Supply (Test #123),” to include the following:

a. Revise test method item 3.8 to include the DC/DC converter.

b. Add the following to the test methods section:

"Demonstrate that the batteries and battery charger meet design capacities by performing discharge and charging tests as follows:

1. Perform battery modified performance discharge or service test in accordance with RG 1.129.

2. Perform battery charger capacity test to verify battery charger output meets design criteria."

14.02-121

In RAI question 14.02-88 the NRC staff requested that the applicant revise the applicable test abstracts to include, where appropriate, the types of performance demonstrations, measurements, and tests listed in RG 1.68, Appendix A.5. In the response to this question the applicant stated that the Power Ascension Test listed in RG 1.68 Appendix A.5.t, which verifies as appropriate, the operability, response times, relieving capacities, set points, and reset pressures for pressurizer relief valves; main streamline relief valves; atmospheric steam dump valves; turbine bypass valves; and turbine stop, intercept, and control valves was not applicable to US EPR. The staff notes that test abstracts #37, #60, #61 and #63 address performance of these tests and demonstration of operability for the above listed valves during hot functional testing. Therefore, the NRC staff requests that the applicant revise table 14.2-1 of the US EPR FSAR to include RG 1.68 Appendix A.5.t for test abstracts #37, #60, #61 and #63 or justify its exclusion.

14.02-122

Regulatory Guide 1.68, Appendix A.1.n.(18), “Auxiliary and Miscellaneous Systems,” states that “the applicant should conduct tests to demonstrate the operability of heat tracing and freeze protection system." The NRC staff requests that the applicant review the test abstracts in section 14.2-12 of the U.S. EPR FSAR to include provisions for electrical heat tracing and freeze protection systems. Additionally, the staff requests that the applicant include the applicable general requirements for electrical heat tracing in the applicable section(s) of the U.S. EPR FSAR.

14.03-11

Table 14.3-8, "ITAAC Screening Summary," lists Kraftwerks Kennzeichen System (KKS) codes for the Emergency Diesel Generator Set. These System KKS codes do not agree with the system KKS codes that are listed in the Equipment Tag Number column in Table 2.5.4-1, "Emergency Diesel Generator Equipment Mechanical Design," and Table 2.5.4-2, "Emergency Diesel Generator Electrical Equipment Design." Table 2.5.4-1 lists system KKS code JXN (Fuel Oil Storage Tank), which does not appear in Table 14.3-8 for the Emergency Diesel Generator Set. Table 14.3-8 lists system KKS codes XKA and CXN for the Emergency Diesel Generator Set, but these codes do not appear in Table 2.5.4-1 or Table 2.5.4-1.

The FSAR should be changed to correct this inconsistency.

14.03.02-42

In its response to **RAI 132, Question 14.03.02-11-1, part h,** the applicant stated that the U.S. EPR FSAR Tier 1, Section 2.1 would be revised to provide additional details regarding the basis for protection against pressurization effects associated with postulated rupture of pipes. In the revised design description write-up of Section 2.1.1 and associated subsections there are references to accident pressure loads and pipe break loads, however there is nothing that specifically addresses cubicle pressurization loads and the basis for protection against pressurization effects. Also in revised ITAAC Tables 2.1.1-4 and 2.1.1-8, cubicle pressurization effects have not been explicitly included. Table 2.1.1-4 provides ITAAC for the Nuclear Island which includes the Reactor Building. Item 3.4 in Table 2.1.1-4 states under "Commitment Wording", that a pipe break hazards analyses summary exists that concludes the plant can be safely shut down and maintained in a cold safe shutdown following a pipe break with loss of offsite power. Under "Inspection, Analysis or Test" it states that a pipe break hazards analysis will be performed. Under "Acceptance Criteria", it addresses pipe stresses in the penetration area, pipe whip restraints and jet impingement shields, environmental effects of postulated pipe rupture, and loads on safety-related SSCs. Cubicle pressurization is not mentioned. Under "Commitment Wording", it should state what the pipe break hazards analysis includes and address cubicle pressurization. Under "Inspection, Analysis or Test" a second activity should be added requiring that an inspection of as-installed features that provide protection against pipe break effects including the effects of cubicle pressurization will be performed and compared to the requirements identified in the pipe break hazards analysis. Under "Acceptance Criteria" cubicle pressurization should be addressed. Item 3.5 in Table 2.1.1-4 appears to address jet impingement shields and pipe whip restraints for certain rooms listed in Table 2.1.1-6. As a result it is not clear if Item 3.4 addresses all other jet impingement shields and pipe whip restraints or is not supposed to address them at all. The applicant needs to revise the

wording in the "Commitment Wording", "Inspection, Analysis or Test" and "Acceptance Criteria" columns for items 3.4 and 3.5 so it is clear as to which aspect of pipe hazards analysis each of these ITAAC items is to address.

Table 2.1.1-8 addresses ITAAC for the Reactor Building. Item 2.4 under Commitment Wording, states that the RB structures are Seismic Category I structures designed and constructed to withstand design basis loads as specified below. Among the loads specified below are accident pressure loads and pipe break loads including reaction loads, jet impingement loads and missile impact loads. The first activity under "Inspection, Analysis or Test" states that an analysis of the RB structures will be performed to the design basis loads. It is not clear if the analysis described in Item 2.4 for pipe break loads will be the same analysis described in Item 3.4 of Table 2.1.1-4 or is a different analysis. The scope that is assigned to Items 3.4 and 3.5 in Table 2.1.1-4 and that assigned to Item 2.4 in Table 2.1.1-8 as it relates to the effects of pipe break needs to be clear and precise. Because it is not, the applicant is requested to do the following as it relates to pipe break, pipe break effects and cubicle pressurization:

1. Include in the design description for the NI structures the basis for protection against cubicle pressurization effects.
2. For Item 3.4 of Table 2.1.1-4, under "Commitment Wording" specify what pipe break effects the pipe break hazards analysis includes and include cubicle pressurization if it applies to this item. Also specify which NI structures this item is applicable to and whether or not it includes the reactor building.
3. For Item 3.4 of Table 2.1.1-4 under "Inspection, Analysis or Test", include an inspection of the structure and require a reconciliation of the inspection with the structural requirements of the pipe break hazards analysis.
4. For Item 3.4 of Table 2.1.1-4 under "Acceptance Criteria", include the acceptance criteria for cubicle pressurization.
5. As both Item 3.4 and Item 3.5 of Table 2.1.1-4 address design features to protect against the effects of pipe break and because Item 3.5 could be a subset of Item 3.4, provide a distinction between the "Commitment Wording", "Inspection Analysis or Test", and "Acceptance Criteria" for each of these items so that there is no ambiguity as to what each are intended to address.
6. Regarding Item 2.4 of Table 2.1.1-8 the applicant is requested to revise this item such that there is no confusion between the scope of Item 2.4 as it relates to pipe break loads and pipe break effects (including cubicle pressurization) and the scope that Items 3.4 and 3.5 of Table 2.1.1-4 are intended to cover.

14.03.03-39

In EPR FSAR Tier 2, Section 3.10.4, AREVA indicated that the COL applicant referencing the US EPR design certification will create and maintain the SQDP file during the equipment selection and procurement phase. Specifically, in Tier 2, Table 1.8-2, Item No. 3.10-2, the applicant states that a COL applicants (Holders in this case) referencing the US EPR design certificate will address the final resolution of the issue. However, the staff concern is that COL applicants must address all COL Items whether final action will be taken before or after the license is issued. To allow the staff to perform necessary review or confirming the creation of the SQDP during the equipment selection and procurement phases, the staff finds that an ITAAC in the FSAR is necessary. The staff requests the applicant to add an appropriate ITAAC in EPR FSAR Tier 1 to address the issue.

14.03.03-40

ITAAC Item 7.1 in Table 2.2.3-3

The applicant in its written response to question 14.03.03-16 revised the AC to state the heat load per one heat exchanger is 2.35E+08 BTU/hr. The written response stated that this heat load was during a design basis accident condition when one heat exchanger was not available do to preventive maintenance, and another heat exchanger was not available do to a single failure. The AC as revised states the SIS/RHRS has the capacity to remove the design heat load via the heat exchangers listed in Table 2.2.3-1. If the heat load is during a design basis accident condition, how many heat exchangers are assumed as being able to remove that heat load in the AC as revised?

14.03.03-41

ITAAC Item 2.1 in Table 2.4.7-1

The applicant in its response to Question 14.03.05-19 revised the ITA to include an analysis in addition to an inspection. In the AC as revised, how does the inspection verify the location of the SMS equipment? Preferably there should be two ITAAC: First ITAAC would be to determine the location of the SMS equipment by an analysis, and the second ITAAC would be to verify by inspection that the location of the SMS equipment was in accordance with the analysis.

14.03.03-42

ITAAC Items 5.11, 5.12, and 5.15 in Table 2.5.1-3

The applicant in its responses to Questions 14.03.06-14 and 15 revised the respective ITA to include an analysis in response to RAI 116, Question 14.03.06-3 but deleted the inspection previously in the ITA. In each AC as revised, the respective electrical equipment are sized or rated to perform their intended functions solely by an analysis. Preferably there should be two ITAAC: First ITAAC would be to determine size or rating of the respective equipment by an analysis, and the second ITAAC would be to verify by inspection that the correct electrical equipment was instaled in accordance with the analysis. This inspection is not to verify the location or arrangment of the eletrical equipment, but to verify that the correct electrical equipment per the analysis is installed in the field.

14.03.03-43

ITAAC Item 5.3 in Table 2.5.4-3

The applicant changed this ITAAC in response to Question 14.03.06-23 to determine the output rating of each EDG by an analysis. The applicant also changed the AC of this ITAAC to verify that the EDG provides the minimum required voltage at the safety related equipments supplied by the EDG with voltage and frequency within a specified range of

variance. The present Commitment Wording only addresses the design commitment that the EDG output rating be above the total demand of the loads connected and capable of being connected to it. The present Commitment Wording does not address the design commitment of each EDG providing a minimum required operating voltage at the supplied safety-related equipment with the EDG steady-state output voltage at ± 5 percent and steady state frequency at ± 2 percent of nominal. The staff wants to know how the present Commitment Wording and ITA address the additional step in the AC about each EDG providing a minimum required voltage to its connected loads?

14.03.03-44

ITAAC Item 2.3 in Table 2.6.9-3

The applicant in its response to Question 14.03.07-16 changed the AC to indicate that each mechanical division of the Emergency Power Generating Building Ventilation System (EPGBVS) is as shown on Figures 2.6.9-1 through 2.6.9-4, and that two mechanical divisions are located in each of the two EPGBs. The staff initially agreed with the applicant's response and closed this RAI question. However, the figures show that there are four EPGBs. That means there is one mechanical division of EPGBVS per EPGB. The question is how are there two mechanical divisions of the EPGBVS in each of two EPGBs?