ArevaEPRDCPEm Resource

From: Tesfaye, Getachew
Sent: Friday, December 16, 2011 8:38 AM
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Subject: U.S. EPR Design Certification Application RAI No. 527 (6179, 6205, 6180), FSAR Ch. 14
Attachments: RAI_527_CHPB_6179_SEB2_6205_CHPB_6180.doc

Attached please find the subject request for additional information (RAI). A draft of the RAI was provided to you on November 25, 2011, and on December 12, 2011, 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, excluding the time period of **December 24, 2011 thru January 2, 2012, to account for the holiday season** as discussed with AREVA NP Inc. For any RAIs that cannot be answered **within 40 days**, it is expected that a date for receipt of this information will be provided to the staff within the 40-day period so that the staff can assess how this information will impact the published schedule.

Thanks,
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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: 14.03.02 - Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria
SRP Section: 14.03.07 - Plant Systems - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: 14.03.02

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

14.02-163

OPEN ITEM

Supplemental question to responses on RAI 386, Questions No. 14.02-151, 14.02-152, 14.02-156, 14.02-158, and 14.02-159. Based on a review of Revision 3 of the U.S. EPR FSAR and the FSAR mark up provided in the response to RAI 386, the staff has identified the following items to be addressed and resolved in the stated FSAR sections that are related to Chapter 14.2.12:

a. A review of FSAR Tier 2, Section 14.2.12.5.4 (Potable and Sanitary Water Systems) indicates that ITP Test No. 225 does not include a test to confirm the proper operation of backflow preventers to prevent the cross contamination of the potable water supply system as described in FSAR Tier 2, Section 9.2.4 given the commitments to comply with Part 20.1406 and GDC 60 of Part 50, Appendix A. The test objectives, methods and acceptance criteria should include the testing of backflow preventers in addition to the testing of isolation valve interlocks.

b. A review of FSAR Tier 2, Section 11.5.3.2 (Liquid Effluents RMS) and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.9.5 (Liquid Waste Processing System Test No. 095) indicates that the test method refers to the use of internal check sources to confirm the operability of monitor R-32 and associated automatic closure of both liquid effluent discharge valves and termination of releases upon detecting discrepancies in pre-established discharge flow rates. However, FSAR Tier 2, Section 11.5.3.2 and Table 11.5-1 note that monitor R-32 relies on the use of a portable and not a built-in check source. Moreover, the test method and acceptance criteria do not identify any requirements on testing the isolation feature upon detecting discrepancies in pre-established discharge flow rates. The applicant is requested to revise the description of the test method and acceptance criteria to include a verification of automatic closure of both discharge valves for both set of conditions (high radioactivity and discrepancies in discharge flow rates) and to correct the inconsistency on whether R-32 relies on the use of a portable or a built-in check source. With respect to the balance of test abstracts described in FSAR Tier 2, Section 14.2.12 for radiation monitoring systems, the applicant is requested to review all test methods and acceptance criteria of radiation monitors listed in FSAR Tier 2, Table 11.5-1 and confirm that there are no discrepancies or omissions in the scope of tested functions and types of check sources being used to perform such tests. For example, ITP Test No. 067 for the SGBS, the test

method and acceptance criteria do not refer to the use of a check source in confirming the function of the four radiation monitors. Similarly, the applicant is requested to review and confirm supporting FSAR sections where information on acceptance criteria can be found for all radiation monitors listed in FSAR Tier 2, Table 11.5-1. For example, the acceptance criteria for Test No. 095 refer to FSAR Tier 2, Section 7.3.1 (ESF Systems) when they should be referencing instead FSAR Tier 2, Section 7.1.1.5.5 (Radiation Monitoring System).

c. A review of FSAR Tier 2, Section 11.5.4.4 (CCWS RMS) and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.5.5 (CCWS Test No. 046) indicates that the test method and acceptance criteria do not refer to radiation monitors R-35 to R-38 in confirming the isolation of CCWS trains upon detecting high activity levels. The applicant is requested to review and address these inconsistencies.

d. A review of FSAR Tier 2, Section 11.5.4.9 (ESWS RMS) and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.5.7 (ESWS Test No. 048) indicates that the test method and acceptance criteria do not refer to radiation monitors R-66 to R-70 in confirming the detection of radioactivity in each train. The applicant is requested to review and address these inconsistencies.

e. A review of FSAR Tier 2, Section 11.5.3.1.2 (MCES RMS) and Table 11.5-1, and FSAR Tier 2, Sections 14.2.12.7.6 (TGSS Test No. 064) and 14.2.12.7.7 (MCES Test No. 065) indicates that the test method and acceptance criteria do not refer to the Vent System for Air Removal and radiation monitor R-3 in confirming the detection of radioactivity in the discharge side of the MCES. The applicant is requested to review and address these inconsistencies.

f. A review of FSAR Tier 2, Section 11.5.3.1.7 (FBVS RMS) and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.8.9 (FBVS Test No. 081) indicates that the test method and acceptance criteria do not refer to FSAR Section 9.4.3 and Figure 9.4.3-3 for the locations of radiation monitors R-17 and R-18 in confirming the detection of radioactivity in each filter train. The applicant is requested to review and address this inconsistency.

g. A review of FSAR Tier 2, Section 11.5.3.1.11 (CRACS RMS) and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.11.19 (RMS Test No. 143) indicates that the test method and acceptance criteria for monitors R-29 and R-30 should refer to FSAR Tier 2, Table 12.3-4 for test criteria rather than Table 12.3-3. The applicant is requested to review and address this inconsistency.

h. A review of FSAR Tier 2, Sections 11.5.3 and 11.5.4 and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.12.1 (Accident Monitoring Test No. 138) indicates that while the test method and acceptance criteria refer to FSAR Tier 2, Section 11.5 and Table 11.5-1 for details, the accident monitoring system is not described in FSAR Tier 2, Section 11.5 nor in Table 11.5-1. The applicant is requested to review and address this inconsistency and confirm whether the nuclear sampling system (FSAR Tier 2, Section 11.5.4.6) and sampling activity system (FSAR Tier 2, Section 11.5.3.1.3) constitute, as combined functions, the accident monitoring system. If so, the applicant is requested to expand the functions and descriptions (as needed) of these two systems in FSAR Tier 2, Sections 11.5.4 and 14.2.12.12.1 and Table 11.5-1. Note that in addressing this concern, the applicant is requested to review and correct the designations of other systems with similar functions. For example, the test objectives described in FSAR Tier 2, Section 14.2.12.12.7 (Test No. 153) refer to two systems with related functions, the severe accident sampling system, and the nuclear sampling system. Accordingly, the designations and functions of such systems should be described consistently throughout the FSAR.

i. A review of FSAR Tier 2, Sections 11.5.3 and 11.5.4 and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.18.6 (Failed Fuel Detection Test No. 205) indicates that while the test method and acceptance criteria refer to FSAR Tier 2, Section 11.5 and Table 11.5-1 for details, the failed fuel detection system is not described in FSAR Tier 2, Section 11.5 nor in Table 11.5-1. The applicant is requested to review and address this inconsistency and update FSAR Tier 2, Section 11.5 and Table 11.5-1 accordingly.

j. A review of FSAR Tier 2, Sections 11.5.3.2 and Table 11.5-1, and FSAR Tier 2, Section 14.2.12.20.1 (Liquid Waste Storage and Processing Systems Test No. 215) indicates that while the test method and acceptance criteria refer to FSAR Tier 2, Section 11.2 and 11.5 and Table 11.5-1 for details, the acceptance criteria do not refer to its radiation monitor (R-32). Note that the comparable test (Test No. 216) description for gaseous wastes refers to its two radiation monitors (R-1 and R-2). The applicant is requested to review and address this inconsistency and update FSAR Tier 2, Section 14.2.12.20.1 accordingly.

14.03.02-56

OPEN ITEM

Follow Up to Question 14.03.02-44

In RAI 386, Question 14.03.02-44, the staff had requested additional information regarding key dimensions to be included in U.S. EPR FSAR Tier 1, Section 2.1. In its response the applicant provided some of the information the staff was seeking, however the response in the staff's view was incomplete. Additional information that the staff believes is necessary to provide a complete response regarding key dimensions is described as follows:

a. The definition of key dimensions provided in the markup to Section 14.3 (see page 14.3-5 of the applicant's response) states that "structural key dimensions include the overall building dimensions (length, width and height) and those dimensions confirmed by the structural design of the critical sections in Appendix 3E. Key dimensions are also provided for the concrete components that provide radiation protection". However this definition does not provide the basis for the selection of critical sections identified in Appendix 3E and therefore does not respond to the staff's concern regarding the basis for selection of key dimensions. In its response to RAI 155, Question 03.08.01-20 the applicant has provided criteria for critical section selection. However, this does not appear to be in the U.S.EPR FSAR. This selection criteria which is also provided in the applicant's response to part (a) of Question 14.03.02-44 states that "critical sections are those portions of individual Seismic Category I structures (i.e., shear walls, floor slabs and roofs, structure-to-structure connections) that are particularly important for prevention or mitigation of consequences of postulated design basis accidents, are expected to experience the largest structural demands during design basis conditions, or are needed for safety evaluation of an essentially complete design." As this criteria provides the basis for critical section selection and subsequently provides the basis for identification of key dimensions for ITAAC, the staff requests that this definition be included in the U.S. EPR FSAR.

b. The applicant states that key dimensions and figures will be added for the equipment hatch and typical cylinder wall and buttress. The equipment hatch has been added along with a key dimension to Tier 1, Section 2.1.1. However a

typical detail for a cylinder wall and buttress has not been added as stated in the response. The applicant is requested to add this detail to the ITAAC of Section 2.1.1.

c. The applicant's definition of a key dimension includes the key dimension for critical sections. Critical sections by the applicant's definition are those portions of individual Seismic Category I structures (i.e., shear walls, floor slabs and roofs, structure-to-structure connections) that are particularly important for prevention or mitigation of consequences of postulated design basis accidents, are expected to experience the largest structural demands during design basis conditions, or are needed for safety evaluation of an essentially complete design. Tier 2, Section 3E, page 3E-2 identifies five critical sections for the RBIS which clearly are important for prevention or mitigation of consequences of postulated design accidents. Therefore, the staff requests that the applicant add these critical sections to the ITAAC of Tier 1, Section 2.1.

d. The applicant states in its response that critical sections have not been included in the U.S. EPR FSAR for the reactor pressure vessel cavity walls or floor. If such sections are identified, the applicant states that key dimensions will be added to the U.S. EPR FSAR Tier 1 to stay aligned with U.S. EPR FSAR Tier 2, Appendix 3E. In its response to RAI 155, Question 03.08.01-20 the applicant identifies typical primary shield wall/reactor vessel support area as a critical section in the RBIS. Therefore the applicant is requested to include this critical section to the ITAAC of Tier 1, Section 2.1.

e. The applicant states that key dimensions have been included for all of the critical sections. However, in its response to RAI 155, Question 03.08.01-20 the applicant identified additional critical sections for the NI that are not identified in its response to Question 14.03.02-44.

    I. The applicant should provide the key dimensions for these additional critical sections and if not available at this time to state when they will be provided.

    II. Included in the critical sections identified in the response to RAI 155, Question 03.08.01-20 are the external walls of the FB, SB, and RSB which provide protection against external hazards. These external walls (without a thickness dimension) are shown in Tier 1, Section 2.1 Figures 2.1.1-2 and 2.1.1-3. However the external walls for EPGB and ESWB are not similarly designated as barriers providing protection against external hazards. The applicant should explain why the walls for the EPGB and ESWB are not external hazard barriers or else include them in the ITAAC for these buildings. In addition, consistent with other critical sections for which the key dimensions are provided, the applicant is requested to provide the wall thickness for all external hazard barriers.

14.03.02-57

OPEN ITEM

Follow Up to RAI 386, Question 14.03.02-45

In RAI 386, Question 14.03.02-45, the staff had requested the applicant to provide all of the barriers needed for internal hazards and to provide the thickness requirements of these barriers as key dimensions. In its response, the applicant has stated that all

internal hazard barriers have been identified. However, instead of barrier dimensions, the applicant has provided ITAAC (see item 2.2 of Table 2.1.1-10, Revision 3) which require that a fire and an internal flood protection analysis be performed and that the analyses be reconciled with an as-built inspection to verify the respective hazards barrier requirements for fire and flood have been met. The Commitment Wording for the internal hazards barriers includes barriers for missile impact. However there are no corresponding analysis, inspection, or acceptance criteria for missile barriers as has been provided for barriers providing fire protection and protection from internal flooding. The applicant is requested to add the appropriate ITAAC requirements for internal missile barriers to the ITAAC tables for all Seismic Category I structures.

In its response the applicant also states that barrier thicknesses for internal missiles inside the RB will be performed later in the design process. The response goes on to imply that internal missiles inside the RB are not credible. Therefore, the response appears to be somewhat contradictory. As requested above the applicant should provide ITAAC for missile barriers inside the RB or provide justification as to why none are necessary.

14.03.02-58

OPEN ITEM

Follow Up to RAI 386, Question 14.03.02-49

In its response to RAI 386, Question 14.03.02-49 the applicant has revised the wording regarding the structural acceptance test which now correctly defines the test pressure and is acceptable. However, in the markup of Tier 1 Table 2.1.1-8, item 2.5, the applicant has deleted previously supplied items a through e which appear in Revision 3 of the ITAAC tables. Item 2.5a through 2.5e dealt with liner and penetration assemblies which the staff believes are important in verifying that the RB will fulfill its intended safety functions. The applicant is requested to explain and justify why these items were removed from the ITAAC table.

14.03.02-59

OPEN ITEM

Follow Up to RAI 386, Question 14.03.02-51

In RAI 386, Question 14.03.02-51, the applicant was asked to provide justification for not instrumenting the containment to measure strains during the SIT as required by the ASME III Division 2 Code for prototype containments. The applicant's response was that the EPR was a non-prototype containment and did not require instrumentation during the SIT. Regarding the need to instrument the containment for the SIT, Paragraph CC 6152 of the ASME III Division 2 Code states that a concrete containment shall be designated a non-prototype containment when the Designer has determined that the design has been verified by previous tests on prototype containments. Therefore, the applicant is requested to provide the prototype containment and the previous tests which allow the U.S. EPR containment to be classified as a non-prototype. In support of its position, specific comparisons between the tested prototype and the U.S. EPR containment should be provided to the staff to verify the similarity of the prototype to the U.S. EPR containment

14.03.02-60

OPEN ITEM

Follow Up to RAI 499, Question 14.03.02-52

In RAI 499, Question 14.03.02-52 the staff had requested that the applicant provide information regarding ITAAC for the integrated leak rate test (ILRT). As indicated in the response, Tier 1 Table 2.1.1-8, item 2.15 identifies the Commitment Wording (CW), Inspections, Tests, Analyses (ITA) and Acceptance Criteria (AC) for an integrated leak rate test (ILRT) of the Reactor Containment Building (RCB). The staff has the following comments on the ITAAC for the ILRT which the applicant is requested to address:

a. Item 2.15 of the ITAAC table appears to address a Type A test although the words do not specify the test is a Type A test. To avoid confusion as to the purpose of the test the applicant should specify that this test is a Type A test intended to meet the requirements of 10CFR50 Appendix J or otherwise state what requirement this test is intended to meet.

b. 10CFR50, Appendix J (Option B) requires that in addition to a Type A test, a Type B and a Type C test also be performed. The applicant should provide justification for apparently not including these additional tests as part of the RCB ITAAC.

c. The Acceptance Criteria of item 2.15 states that the leakage rate does not exceed 0.25% of RCB air mass per day at containment pressure of 55 psig. The applicant's response says that this is the maximum allowable containment leakage rate (La). Appendix J requirements state that the leakage rate for a Type A test must not exceed the allowable leakage rate with margin as specified in the Technical Specification. It goes on to state that Type B and Type C tests must demonstrate that the sum of the leakage rates at accident pressure of Type B tests, and pathway leakage rates from Type C tests is less than the performance criterion (La) with margin as specified in the Technical Specification. The Technical Specification for the ILRT covered in U.S. EPR FSAR Section 5.5.15.d says that the acceptance criteria for a Type A test is a leakage rate ≤ to 0.75 La where La is the allowable leakage rate. For Type B and Type C tests the acceptance criteria for allowable leakage rate is ≤ 0.60 La. To ensure that Appendix J requirements are being met, these tests and associated acceptance criteria should be reflected in the ITAAC of Table 2.1.1-8.

d. If the Type B test and Type C test each meets a leakage rate of 0.60 La, it appears that their sum would exceed the Appendix J pathway leakage performance criterion for the sum of the Type B and Type C Tests. The applicant should provide justification for the acceptance criteria of the Type B and Type C tests.

14.03.02-61

OPEN ITEM

Follow Up to RAI 499, Question 14.03.02-53

In RAI 499, Question 14.03.02-53, the staff had asked the applicant to provide ITAAC for the vent stack as it had been categorized as a SC I structure. In response, the applicant provided a change to U.S. EPR FSAR Tier 1 Section 2.1.1.3 in which it states under Description that the Seismic Category I FB structure includes the vent stack. It then goes

on to say that the FB supports the vent stack on top of the stair tower between the FB and SB4. The staff has two concerns with the Revision 4 interim wording provided with the response:

a. It is not clear from the description that the vent stack is a SC I structure. The description merely states that the vent stack is part of the SC I FB. The lead in sentence under Description says the FB is a reinforced concrete, SC I, safety-related structure. However the vent stack is a steel structure sitting on top of the FB. It will have a different design code than that of the FB. To remove any confusion over its seismic category, the applicant is requested to specifically identify the vent stack as a SC I structure.

b. The vent stack is not mentioned in ITAAC Table 2.1.1-11 for the FB. It should be made clear in Tier 1, Table 2.1.1-11 that ITAAC for the FB also apply to the Vent Stack.

c. The Description in Tier1, Section 2.1.1.3 is confusing regarding the location of the stair towers and makes it appear that they are separate and distinct from the FB. As the vent stack is supported on top of the stair tower, the applicant is requested to revise the description to make it clear as to which structure the stair towers belong.

14.03.02-62

OPEN ITEM

Follow Up to RAI 499, Question 14.03.02-55

In RAI 499, Question 14.03.02-55 the applicant was asked to provide ITAAC language for the NAB that was consistent with the ITAAC for other building structures and that ITAAC be provided covering the required separation distance between the NAB and the NI. The staff has the following concerns regarding the response provided by the applicant.

a. In its response to part (a) the applicant states that U.S. EPR Tier 1, Section 2.1.3, Item 3.1 will be revised to be consistent with the language provided in the ITAAC for the other structures. However the language is not consistent. For example, the Commitment Wording (CW) for item 2.1 of ITAAC Table 2.1.1-10 for the Safeguard Building states “The SB structures are Seismic Category I and are designed and constructed to withstand design basis loads, as specified below, without loss of structural integrity and safety-related functions.” The loads specified include normal operating loads as well as tornado and seismic loads. For the NAB, item 3.1 of ITAAC Table 2.1.3-1 under the CW states “The NAB is Seismic Category II and is designed to withstand design basis SSE and tornado wind loading without failure onto the adjacent FB or SB Division 4.” This is not the same as stating the NAB will be designed and constructed to withstand design basis loads including the design basis SSE and tornado wind loading without loss of structural integrity. In addition, per U.S. EPR FSAR Tier 2 Sections 3.3.2.3 and 3.7.2.8 the NAB is supposed to be designed to codes and standards associated with a SC I structure with a margin of safety that is equivalent to that of a Category I structure. The CW and Acceptance Criteria (AC) should reflect the requirements that there will be no loss of structural integrity under design basis loads including the design basis SSE and tornado wind loading and that the NAB has a margin of safety that is equivalent to that of a SC-I

Structure. Part b of Item 3.1 of Table 2.1.3-1 under Inspection, Test, Analyses (ITA) states that deviations from the design will be analyzed. It does not specify what types of deviations are to be analyzed. Under AC it states that a report reconciles deviations to the design. In both cases the wording is not specific enough to make clear the intent, nor is the wording consistent with the wording for other structures in which the intent is to reconcile the as-designed structure with its as-built configuration. The applicant is requested to revise the language to maintain consistency with the ITAAC for other U.S. EPR structures.

b. Regarding item 3.2 of ITAAC Table 2.1.3-1 covering the separation distance between the NI and the NAB, under ITA there should be a requirement that an analysis be performed to determine the required separation distance between the NI and the NAB under differential settlement and design basis loads. Under the ITA column, an inspection should be performed to verify the actual gap exceeds the separation required by the analyses. Currently, it states only that an inspection of the NAB will be performed, but does not state the purpose of the inspection. Under the AC of item 3.2, it is not sufficient to state that a minimum separation distance of 18 inches exists between the NAB and the NI common basemat. The AC should be that a gap of 18 inches exists and that this gap exceeds the required gap with margin as determined by analysis. The staff requests that the appropriate changes be made to item 3.2 of ITAAC Table 2.1.3-1 to address the staff's concerns.

14.03.07-38

OPEN ITEM

Supplemental question to responses on RAI 450, Question No. 14.03.07-37. Based on a review of Revision 3 of the U.S. EPR FSAR and the FSAR mark up provided in the response to RAI 450, the staff has identified the following items to be addressed and resolved in the stated FSAR sections that are related to Chapter 14.3 and Tier 1 ITAAC:

a. A review of the proposed response to RAI 450, Question No. 14.03.07-37 (Part c) indicates that the applicant misunderstood the staff's concern on the scope of ITAAC in confirming the isolation of the steam generator blowdown upon detecting temperatures in excess of 131 deg. F. The issue is that if excessive blowdown temperatures were encountered and the SGBD isolation function was not confirmed, there is a risk that radioactivity would be leached out of those portions of the resin beds exposed to high temperatures; thereby compromising compliance with the requirements of 10 CFR Part 20 on effluent release limits. Also, confirming the operation of the isolation function upon the detection of elevated SGBD temperature is consistent with the commitments made in FSAR Tier 2, Section 12.3.6, which states that the U.S. EPR design complies with 10 CFR 20.1406 by applying design concepts that minimize the contamination of plant systems and prevent unintended releases of radioactivity. The applicant is requested to re-evaluate the scope of this ITA and AC in light of the above staff concern by including in the ITA and AC the isolation function of the steam generator blowdown upon detecting elevated temperatures.

b. A comparison of FSAR Tier 1, Section 1.1 and ITAAC for systems were test signals are used to confirm the operability of systems equipped with radiation detectors, indicates that the definition of "test" and "test signals" are incomplete and inconsistent. For example, FSAR Tier 1, Table 2.4.22-3 refers to "tests" will be performed to confirm the output and isolation of the control room air intake upon detecting radioactivity. In FSAR Tier 1, Table 2.9.1-3 refers to "tests" based on "simulating a high radiation signal" in confirming the closure of an isolation valve. In FSAR Tier 1, Table 2.6.4-3 refers to a "test" based on upon

the receipt of “test signal” in confirming the closure of a damper. Given that there are several means of initiating test signals, some by the introduction of electronic digital pulses others with the use of radioactive check or calibration sources, there is a need to provide more specificity in the definition and application of “test signals” used in ITA and AC for systems that rely on radiation detectors. The use of a simulated test signal is the equivalent of an electronic functional channel check. This concern is important because the use of a simulated test signal, by itself, does not confirm the proper function of a radiation detector since it is the essential component in any radiation monitoring channel. The applicant is requested to expand the scope of definitions by including descriptions of test signals that can rely on simulated test signals versus those that should use radioactivity/radiation in the confirming the AC of systems that rely on radiation detectors, and revise Tier 1 where ever tests are mandated in demonstrating compliance with an AC.

c. In FSAR Tier 1, Rev. 3, Section 2.6.1, confirm whether the description of the main control room intake ventilation system includes a HEPA filter. As described, the system only includes a charcoal train, which is not consistent with the design described in FSAR Tier 2, Rev. 3, Section 9.4.1 and elsewhere in Section 2.6.1. In FSAR Tier 1, Rev. 3, Section 2.6.1, confirm whether the radiation monitoring instrumentation used to isolate the main control room intake ventilation system upon the detection of elevated radioactivity levels should be included in Table 2.6.1-2 given that the function of this instrumentation is included in the AC listed in Table 2.6.1-3. Also confirm whether the radiation monitoring detectors (series KLK65CRxxx and KLK66CRxxx) used to isolate the control room air intake should be more appropriately listed in Section 2.6.1 rather than in FSAR Tier 1, Rev. 3, Section 2.9.4. As a result, review and revise the information describing commitments, ITA, and AC presented in Tables 2.6.1-2 and 2.6.1-3 accordingly.

d. In FSAR Tier 1, Rev. 3, Section 2.6.4, confirm whether the description of isolation functions should also include one that would be initiated by the detection of elevated levels of radioactivity in addition to the receipt of a containment isolation signal. In FSAR Tier 1, Rev. 3, Section 2.6.4, confirm whether the radiation monitoring instrumentation used for isolation upon the detection of elevated radioactivity levels is complete in Table 2.6.4-2, given that FSAR Tier 2, Rev. 3, Table 11.5-1 shows two additional sets instrumentation (series KLK34CRxxx and KLK35CRxxx) with automatic control features. As a result, review and revise the information describing system functional arrangements and commitments, and update ITA, and AC presented in Table 2.6.4-3 and Figure 2.6.4-1 accordingly.

e. In FSAR Tier 1, Rev. 3, Section 2.6.6, confirm whether the description of isolation functions should also include one that would be initiated by the detection of elevated levels of radioactivity in addition to the receipt of a containment isolation signal. In FSAR Tier 1, Rev. 3, Section 2.6.6, confirm whether the radiation monitoring instrumentation used for isolation upon the detection of elevated radioactivity levels is complete in Tables 2.6.6-2 and 2.6.6-3, given that FSAR Tier 2, Rev. 3, Table 11.5-1 shows instrumentation (series KLK36CRxxx and KLK37Crxxx) with automatic control features. As a result, review and revise the information describing system functional arrangements and commitments, and update ITA, and AC presented in Table 2.6.6-3 and Figure 2.6.6-1 accordingly.

f. In FSAR Tier 1, Rev. 3, Section 2.6.8, confirm whether the description of isolation functions should also include one that would be initiated by the detection of elevated levels of radioactivity in addition to the receipt of a containment isolation signal. In FSAR Tier 1, Rev. 3, Section 2.6.8, confirm whether the radiation monitoring instrumentation used for isolation upon the detection of elevated radioactivity levels is complete in Tables 2.6.8-3 and 2.6.8-4, given that FSAR Tier 2, Rev. 3, Table 11.5-1 shows instrumentation (KLA and

KLL series) with automatic control features. As a result, review and revise the information describing system functional arrangements and commitments, and update ITA, and AC presented in Table 2.6.8-4 and Figure 2.6.8-1 accordingly.

g. In FSAR Tier 1, Rev. 3, Section 2.8.7, confirm whether the description of isolation functions in the functional arrangements and performance subsections should include one initiated by the combined detection of elevated levels of radioactivity and a cool down signal, as described in FSAR Tier 2, Rev. 3, Sections 11.5.4.3 and 10.4.8. In FSAR Tier 1, Rev. 3, Section 2.8.7, confirm whether the radiation monitoring instrumentation used for isolation upon the detection of elevated radioactivity levels is complete and consistent between Tables 2.8.7-2 and 2.8.7.3, given the details presented in FSAR Tier 2, Rev. 3, Sections 11.5.4.3 on automatic control features. As a result, review and revise the information describing system functional arrangements and commitments, and update ITA, and AC presented in Table 2.8.7-3 and Figure 2.8.7-1 accordingly.

h. In FSAR Tier 1, Rev. 3, Section 2.9.1, confirm whether the description of isolation functions should also include one that would be initiated by the combined detection of elevated levels of radioactivity and differential discharge flow rates above established criteria, as described in FSAR Tier 2, Rev. 3, Section 11.2.1.2.3. As a result, review and revise the information in Section 2.9.1 describing the system functional arrangements, performance, and commitments, and update ITA, and AC presented in Table 2.9.1-3 to include a test confirming that liquid effluent releases would be terminated on the combined detection of radioactivity and differential discharge flow rates above established criteria.

i. In FSAR Tier 1, Rev. 3, Section 2.9.4, confirm whether the description of the radiation monitor used for RCS leak detection is properly described as to its function and need for inclusion in Tables 2.9.4-1, 2.9.4-2, and 2.9.4-3. A review of FSAR Tier 2, Rev. 3, Table 11.5-1 shows instrumentation (series KLK05CRxxx, KLK90CRxxx, and LKL70CRxxx) that are not included in Section 2.9.4 tables. As a result, review and revise the information in Section 2.9.4 describing system functional arrangements, performance, and commitments, and update ITA, and AC presented listed in Tables 2.9.4-3 accordingly.