ArevaEPRDCPEm Resource

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Sent: Monday, October 25, 2010 2:09 PM
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Cc: Harvey, Brad; Brown, David; Patel, Jay; Colaccino, Joseph; ArevaEPRDCPEm Resource
Subject: Draft - U.S. EPR Design Certification Application RAI No. 453(5109, 5110, 5111), FSAR Ch. 2, NEW PHASE 4 RAI
Attachments: Draft RAI_453_RSAC_5109_5110_5111.doc

Attached please find draft RAI No. 453 regarding your application for standard design certification of the U.S. EPR. If you have any question or need clarifications regarding this RAI, please let me know as soon as possible, I will have our technical Staff available to discuss them with you.

Please also review the RAI to ensure that we have not inadvertently included proprietary information. If there are any proprietary information, please let me know within the next ten days. If I do not hear from you within the next ten days, I will assume there are none and will make the draft RAI publicly available.

Thanks,
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Hearing Identifier: AREVA_EPR_DC_RAIs
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Request for Additional Information No. 453(5109, 5110, 5111), Revision 1

10/25/2010

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 02.03.01 - Regional Climatology
SRP Section: 02.03.04 - Short Term Atmospheric Dispersion Estimates for Accident Releases
SRP Section: 02.03.05 - Long-Term Atmospheric Dispersion Estimates for Routine Releases

Application Section: FSAR Chapter 2

QUESTIONS for Siting and Accident Conseq Branch (RSAC)

02.03.01-17

OPEN ITEM
NEW PHASE 4 RAI

This question is related to the applicant's response to RAIs 02.03.01-12 and 02.03.01-15. The staff wishes to clarify the criterion for listing site parameters in FSAR Tier 1, Table 5.0-1 and FSAR Tier 2, Table 2.1-1, as well as ask the applicant to revise the FSAR to clarify other details related to winter precipitation loads as presented in Revision 2 to the FSAR.

a. Consider replacing all six winter precipitation site parameters listed in Revision 2 to FSAR Tier 1, Table 5.0-1 and FSAR Tier 2, Table 2.1-1 with one site parameter, "Sum of normal winter precipitation event and extreme frozen winter precipitation event ground load: 143 psf." Consider adding a footnote to this new site parameter in FSAR Tier 1, Table 5.0-1 and FSAR Tier 2, Table 2.1-1 stating that the effect of the extreme liquid winter precipitation event on roof loads is negligible due to the lack of parapets.

   The discussion in FSAR Tier 2, Section 3.8.4.3.1 states that the normal design live load due to rain, snow, and ice includes the weight of the normal winter precipitation event and the weight of the extreme winter precipitation event. Therefore, it is appropriate to include just one site parameter that combines the weight of the normal winter precipitation event and the extreme winter precipitation event. Also, the intent of FSAR Tier 1, Table 5.0-1 and FSAR Tier 2, Table 2.1-1 is to list those site parameters (i.e., the postulated physical, environmental, and demographic features of an assumed site, such as ground snow loads) that are to be compared to a COL applicant's site characteristics pursuant to 10 CFR 52.79(d)(1). FSAR Tier 2, Table 5.0-1 and FSAR Tier 2, Table 2.1-1 need not contain the design characteristics (e.g., roof loads) resulting from the assumed site parameter values (e.g., ground loads).

b. Consider adding a reference to FSAR Tier 2, Section 2.3 in the precipitation section subtitle in FSAR Tier 2, Table 2.1-1.

c. Consider eliminating the discussion related to rain, snow, and ice loads from FSAR Tier 2, Section 2.4. This discussion better belongs in FSAR Tier 2, Section 2.3, as outlined in SRP 2.3.1 and ISG-07.

d. Consider clarifying in FSAR Tier 2, Section 3.8.4.3.1, that the design load related to rain, snow, and ice is based on a ground snow load of 143 lbs/ft^2 and that this corresponds to a roof load of 100 lbs/ft^2.

02.03.01-18

Follow-up to RAI 256, Question 02.03.01-13:

This question is related to the applicant's response to RAI 02.03.01-13. The staff finds the applicant's response to this RAI incomplete.

a. In order to be consistent with Footnote 2 to FSAR Tier 1, Table 5.0-1 and Footnote 3 to FSAR Tier 2, Table 2.1-1, consider revising FSAR Tier 2, Section 2.3.1.1, to state that the U.S. EPR zero percent exceedance air temperature site parameter values are based on conservative estimates of 100-year return period values and historic extreme values, whichever is bounding.

b. In order to be consistent with the definitions provided in 10 CFR 52.1, please justify why the first sentence in FSAR Tier 2, Section 2.3.1.1, should not be changed to read:

> The site parameters for the dry-bulb and wet-bulb temperatures are based on the EPRI ALWR Utility Requirements Document (Reference 1) and available Early Site Permit applications.

02.03.01-19

OPEN ITEM
NEW PHASE 4 RAI

COL Information Item 2.3-10 in FSAR Tier 2, Table 1.8-2, states that a COL applicant that references the U.S. EPR design certification will describe the means for proving UHS makeup sufficient to meet the maximum evaporative and drift water loss after 72 hours through the remainder of the 30 day period consistent with RG 1.27. This same COL Information Item is presented in FSAR Tier 2, Section 2.3.1.2.

Please justify why this COL Information Item is associated with FSAR Tier 2, Section 2.3.1 (Regional Climatology) instead of FSAR Tier 2, Section 2.4.8 (Cooling Water Canals and Reservoirs). FSAR Tier 2, Section 2.4.8 is the section in the FSAR that is concerned with evaluating the design basis for cooling water canals and reservoirs used for makeup to the UHS cooling tower basins.

02.03.04-10

OPEN ITEM
NEW PHASE 4 RAI

This question is related to the applicant's response to RAI 10, Question 02.03.04-1.

The response to RAI 10, Question 02.03.04-1 states, in part, that the U.S. EPR 0-2 hour LPZ c/Q site parameter value was based on a X/Q value derived from using meteorological data from the Calvert Cliffs (CCNPP) site. Yet, Revision 6 to the CCNPP Unit 3 COL application requires a departure from the U.S. EPR 0-2 hour LPZ X/Q site parameter value (1.75E-4 sec/m^3) because the corresponding CCNPP 0-2 hour LPZ X/Q site characteristic value (2.151E-4 sec/m^3) is higher.

Please justify why the U.S. EPR 0-2 hour LPZ X/Q site parameter value should not be revised to ensure that a departure will not be required for the CCNPP COL application, especially since, according to the response to RAI 10, Question 02.03.04-1, the U.S. EPR 0-2 hour LPZ X/Q site parameter value is based on data from the CCNPP site.

02.03.04-11

Follow-up to RAI 256, Question 02.03.04-7 and RAI 256, Question 02.03.04-8

This question is related to the applicant's response to RAIs 02.03.04-7 and 02.03.04-8.

a. Please justify not providing "direction to source" information in terms of degrees from plant north for each modeled source-receptor combination in FSAR Tier 2, Tables 2.3-1 and 2.3-2.

b. Please explain the apparent discrepancy in the stack release height values between FSAR Tier 2, Tables 2.3-1 (32.1 meters) and 2.3-2 (33.9 meters).

02.03.04-12

OPEN ITEM
NEW PHASE RAI

This question is related to the applicant's response to RAI 37, Question 02.03.04-5.

FSAR Tier 2, Table 2.1-1 presents a set of site parameters which are the postulated physical, environmental, and demographic features of an assumed site which the U.S. EPR standard design is based. The intent of FSAR Tier 2, Table 2.1-1 is to list those assumed site features that are to be compared to a COL applicant's site characteristics pursuant to 10 CFR 52.79(d)(1).

The site parameters (i.e., assumed site features) listed in FSAR Tier 2, Table 2.1-1 includes accident atmospheric dispersion factors (X/Q values) to the MCR/TSC intake and unfiltered inleakage locations for the following release pathways:

- Vent stack base
- Safeguard building canopy points #1 and #2
- Material lock (open equipment hatch)
- Depressurization shaft
- Main steam relief train silencers #1, #2, #3, and #4

The staff reviewed the description of the design basis accident radiological consequences analyses presented in FSAR Tier 2, Section 15.0.3 to determine if the assumed fission product

transport to the environment for each design-basis accident was compatible with the X/Q values used to model the release pathway. In performing this review, the staff noticed the following:

a. Only the X/Q values for the main steam train silencer #3 are used for the design-basis accident analyses, presumably because the X/Q values for the main steam train silencer #3 bound the X/Q values for the main steam train silencers #1, #2, and #4. Therefore, please justify why the X/Q site parameter values listed in FSAR Tier 2, Table 2.1-1 for the main steam train silencers #1, #2, and #4 should not be the same values as the X/Q site parameter values listed for main steam train silencer #3.

b. Similarly, only the X/Q values for the safeguard building canopy point #1 are used for the design-basis accident analyses, presumably because the X/Q values for the safeguard building canopy point #1 bound the X/Q values for the safeguard building canopy point #2. Therefore, please justify why the X/Q site parameter values listed in FSAR Tier 2, Table 2.1-1 for the safeguard building canopy point #2 should not be the same values as the X/Q site parameter values listed for safeguard building canopy point #1.

c. The X/Q values for the material lock (open equipment hatch) and depressurization shaft release pathways do not appear to be used in any of the design basis accident radiological consequences analyses. Consequently, please justify why these X/Q values are included as site parameters in FSAR Tier 2, Table 2.1-1.

02.03.04-13

OPEN ITEM
NEW PHASE RAI

COL Information Item 2.3-7 in FSAR Tier 2, Table 1.8-2 states that a COL applicant that references the U.S. EPR design will provide X/Q values for each cumulative frequency distribution which exceeds the median value (50 percent of the time) as part of the assessment of the postulated impact of an accident on the environment. There are no U.S EPR site parameters related to these median X/Q values (e.g., median X/Q values are not used anywhere in the U.S. EPR FSAR) and they are not required to be presented in the COL FSAR by COL applicants. Consequently, please justify including COL Information Item 2.3-7 in FSAR Tier 2, Table 1.8-2.

02.03.05-9

OPEN ITEM
NEW PHASE 4 RAI

This question is related to the applicant's response to RAI 10, Question 02.03.05-1.

The response to RAI 10, Question 02.03.05-1 states, in part, that the U.S. EPR maximum annual average X/Q site parameter value was based on a X/Q value derived from using meteorological data from the Calvert Cliffs (CCNPP) site. Yet, Revision 6 to the CCNPP Unit 3 COL application requires a departure from the U.S. EPR maximum annual average X/Q site parameter value (4.973E-6 sec/m^3) because the corresponding CCNPP site characteristic value (5.039E-6 sec/m^3) is higher.

Please justify why the U.S. EPR maximum annual average X/Q site parameter value should not be revised to ensure that a departure will not be required for the CCNPP COL application, especially since, according to the response to RAI 10, Question 02.03.05-1, the U.S. EPR maximum annual average X/Q site parameter value is based on data from the CCNPP site.