CCNPP3eRAIPEm Resource

From: Arora, Surinder
Sent: Thursday, July 22, 2010 1:45 PM
To: 'Poche, Robert'; 'cc3project@constellation.com'
Cc: CCNPP3eRAIPEm Resource; Roach, Edward; Dehmel, Jean-Claude; Colaccino, Joseph; Biggins, James; Vrahoretis, Susan; Patel, Jay; Chazell, Russell
Subject: DRAFT RAI 255 CHPB 4819
Attachments: DRAFT RAI 255 CHPB 4819.doc

Rob,

Attached is DRAFT RAI No. 255 (eRAI No. 4819). You have until August 3, 2010, to review this RAI and decide whether you need a conference call to discuss the question in this RAI before the final issuance. After the phone call or on August 3, 2010, the RAI will be finalized and sent to you for response. You will then have 30 days to provide a technically complete response or an expected response date for the RAI.

Thanks.

SURINDER ARORA, PE
PROJECT MANAGER,
Office of New Reactors
US Nuclear Regulatory Commission

Phone: 301 415-1421
FAX: 301 415-6406
Email: Surinder.Arora@nrc.gov

Hearing Identifier: CalvertCliffs_Unit3Col_RAI
Email Number: 3

Mail Envelope Properties (B46615B367D1144982B324704E3BCEED2774E1BDE2)

Subject: DRAFT RAI 255 CHPB 4819
Sent Date: 7/22/2010 1:44:38 PM
Received Date: 7/22/2010 1:44:40 PM
From: Arora, Surinder

Created By: Surinder.Arora@nrc.gov

Recipients:
"CCNPP3eRAIPEm Resource" <CCNPP3eRAIPEm.Resource@nrc.gov>
Tracking Status: None
"Roach, Edward" <Edward.Roach@nrc.gov>
Tracking Status: None
"Dehmel, Jean-Claude" <Jean-Claude.Dehmel@nrc.gov>
Tracking Status: None
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>
Tracking Status: None
"Biggins, James" <James.Biggins@nrc.gov>
Tracking Status: None
"Vrahoretis, Susan" <Susan.Vrahoretis@nrc.gov>
Tracking Status: None
"Patel, Jay" <Jay.Patel@nrc.gov>
Tracking Status: None
"Chazell, Russell" <Russell.Chazell@nrc.gov>
Tracking Status: None
"'Poche, Robert'" <Robert.Poche@constellation.com>
Tracking Status: None
"'cc3project@constellation.com'" <cc3project@constellation.com>
Tracking Status: None

Post Office: HQCLSTR01.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	650	7/22/2010 1:44:40 PM
DRAFT RAI 255 CHPB 4819.doc	41978	

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

Request for Additional Information No. 255 (eRAI 4819)
DRAFT
7/22/2010

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 11.03 - Gaseous Waste Management System
Application Section: 11.3

QUESTIONS for Health Physics Branch (CHPB)

11.03-2

Supplemental question to the response of RAI 210, Question 11.03-1

In the response dated April 24, 2010, the applicant provides information addressing the staff's concerns on the approach used in determining doses to the members of the public due to gaseous effluents and confirming compliance with NRC regulations and guidance. The response presents a complete revision of FSAR Section 11.3 and includes information supporting a site-specific dose assessment for gaseous effluent releases, a cost-benefit analysis, and a revision to the departures and exemption reports (Part 7 of the application).

The additional information appears generally acceptable. The staff confirmed the dose results for the maximally exposed individual, but was unable to independently confirm population doses results lacking specific information on parameters and approach used in the cost-benefit analysis. The staff also noted a number of inconsistencies in the presentation of the new information and proposed revisions to the FSAR given the concerns identified in RAI 210, Questions 11.03-1(1) and 11.03-1(2). Based on the staff's review of responses to RAI questions, the applicant is requested to address the items listed below and provide sufficient information for the staff to conduct an independent evaluation of the approach and results presented in the proposed revision of FSAR Section 11.3:

A. FSAR Section 11.3.3.4

1. In FSAR Section 11.3.3.4, the discussion presenting the dose result of 1.47 mrem/yr should be qualified as this result includes an exposure pathway and locations that are different than those forming the basis of the MEI dose results presented in FSAR Tables 11.3-5, 11.3-6 and 11.3-7. The applicant is requested to qualify the differences in exposure pathway locations in that discussion.

2. A new paragraph should be added to this section addressing the requirements of 10 CFR Part 50, Appendix I, Section II.B.1 in complying with the beta and gamma air dose design objectives. The discussion should refer the results listed in FSAR Table 11.3-7.

3. The applicant is requested to add a reference for Regulatory Guide 1.109 since it forms the basis of the dose calculation methodology and for consistency with references listed in FSAR Section 11.2 on dose calculations for liquid effluent discharges.

B. FSAR Section 11.3.3.5

In FSAR Section 11.3.3.5, the text states that gaseous effluent releases comply with 10 CFR Part 20, Appendix B, Table 2 limits, but does not provide results demonstrating that conclusion. The discussion relies on the results presented in U.S. EPR FSAR Table 11.3-6 as supporting documentation. It should be noted that the results presented in U.S. EPR FSAR Table 11.3-6 are based on a different set of assumptions applied to a hypothetical site. Consequently, these results and underlying assumptions do not apply to the CCNPP-3 plant and site-specific conditions. The applicant is requested to provide site-specific information demonstrating compliance with 10 CFR Part 20, Appendix B, Table 2, Column 1 limits for gaseous effluents and unity-rule for the sum-of-the-ratios for plant stack releases associated with normal operation and maximum fuel defects.

C. FSAR Table 11.3-1

The response to RAI 210, Question 11.3-1 (Encl. 2, p.3) states that the selection of dose receptors and exposure pathways is based on the results of the 2007 land-use census. However, the information presented in FSAR Table 11.3-1 and supporting text do not discuss, nor reference the results of a land-use census and how its results were justified for the analysis presented in FSAR Section 11.3.3.4. The applicant is requested to provide information supporting the selection of the applied offsite dose receptors and exposure pathways and provide a reference for the 2007 land-use census.

D. FSAR Tables 11.3-1, 11.3-5, and 11.3-6

1. A review of FSAR Section 2.3.5 and FSAR Table 2.3-130 indicates that a nearest resident is listed among other dose receptor locations. FSAR Tables 11.3-1, 11.3-5, and 11.3-6 do not identify the nearest resident under the location and dose receptor table headings, while Table 11.3-4 identifies locations only. The applicant is requested to identify the nearest resident location and doses in FSAR Tables 11.3-1, 11.3-5, and Table 11.3-6.

2. Footnote b to FSAR Table 11.3-1 states that specific locations for the beef cattle exposure pathway are not available. Similarly, Footnote c to FSAR Table 11.3-1 states that there are no milk animals within 5 miles (8 km) of the proposed plant site. The applicant is requested to provide specific references for these statements in table footnotes. These observations also apply to the information and footnotes presented in FSAR Tables 11.3-4, 11.3-6, and 11.3-7.

E. FSAR Table 11.3-2

1. Footnote 1 to FSAR Table 11.3-1 states that the crop growing and animal grazing seasons occur from April to October. The applicant is requested to provide a reference for this statement.

2. Under the “Value” column heading indicates whether all table citations are from the CCNPP-3 FSAR.

F. FSAR Table 11.3-3

For the information presented in FSAR Table 11.3-3, the applicant is requested to cite a reference for the listed regional food and crop production rates.

G. FSAR Table 11.3-6

In FSAR Table 11.3-6, the applicant is requested to include thyroid doses for the inhalation, vegetable, and meat exposure pathways given that the thyroid, along with bone, are the organs with the highest projected dose estimates.

H. FSAR Tables 11.3-8 to 11.3-19 and Supporting FSAR Section 11.3.4

For the information supporting the results of the cost-benefit analysis (CBA), confirm and correct the following observations on results and footnotes presented in FSAR Tables 11.3-8 to 11.3-19 and supporting discussions in FSAR Section 11.3.4:

1. FSAR Section 11.3.4.1 states that that CBA relies on an additional charcoal delay bed for the system augmentation; however, FSAR Section 11.3.4.1 and Table 11.3-8 do not specify its size. The applicant is requested to qualify the results presented in FSAR Table 11.3-8 for the alternate case by noting that the increased noble gases holdup time reflects the use of a 3-ton charcoal delay tank.

2. In FSAR Section 11.3.4.2, confirm that the reference to FSAR Table “11.2-19” should be changed instead to FSAR Table 11.3-19 in the last line of the second paragraph.

3. In FSAR Section 11.3.4.2, the last paragraph acknowledges that sources of airborne radioactivity from building ventilation systems do not benefit from the holdup afforded by the additional charcoal delay tank as a system augmentation. The sources of radioactivity from plant buildings is characterized as being significantly higher than the source term processed and treated via the gaseous waste processing system. For the gaseous effluent source term shown in U.S. EPR FSAR Table 11.3-3, the radioiodine source term is two to three orders of magnitude higher than any of the particulate radionuclides, and the particulate source term, in the aggregate, is comparable to that of I-131 or I-132. Given the above, the CBA should consider another case with a system augmentation that includes a system augmentation applying a HEPA/charcoal filtration system for particulates and radioiodines. The applicant is requested to evaluate the source term presented in U.S. EPR FSAR Table 11.3-3 and update the assumptions for the base and alternate cases and CBA results presented in FSAR Tables 11.3-8, 11.3-18, and 11.3-19.

4. FSAR Table 11.3-10 lists atmospheric dispersion parameters used in calculating population doses within a 50-mile (80 km) radius. While not stated in Table 11.3-10, a review of the data and Table 11.3-2 indicates that they represent undecayed and undepleted X/Q values. FSAR Table 11.3-10 and the balance of the information supporting the CBA do not present the other set of atmospheric parameters, namely: decayed and undepleted, and decayed and depleted out to 50 miles (80 km). Given that the CBA analysis and dose calculations are stated to rely on Regulatory Guides (RG) 1.109 and 1.110, the applicant is requested to include in FSAR Section 11.3.4 the missing meteorological dispersion parameters.

5. For the food production data presented in FSAR Tables 11.3-9 to 11.3-17, provide references supporting the listed population distributions and production rates for milk, beef, poultry, grain, and vegetable within the 50-mile (80 km) radius.

6. In determining whether the system augmentation complies with Section II.D of Appendix I to 10 CFR Part 50, the methodology summarized in FSAR Table 11.3-19 describes a process other than noted in RG 1.110, Regulatory Position C.5 and Appendix A, while stating in FSAR Section 11.3.4 that the method applies RG 1.110. The applicant is requested to describe the equivalency of the method applied in the CCNPP-3 FSAR.

7. In FSAR Table 11.3-19, the applicant is requested to confirm that RG 1.110, Table A-3 should be added to the entry listing the annual operating and maintenance costs of $67,000 for the system augmentation.