

## CCNPP3eRAIPEm Resource

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**From:** Arora, Surinder  
**Sent:** Thursday, January 13, 2011 8:44 AM  
**To:** 'Poche, Robert'; 'cc3project@constellation.com'  
**Cc:** CCNPP3eRAIPEm Resource; Dehmel, Jean-Claude; Colaccino, Joseph; Patel, Jay; Wilson, Anthony; Vrahoretis, Susan; Roach, Edward  
**Subject:** FINAL RAI 291 CHPB 5322  
**Attachments:** FINAL RAI 291 CHPB 5322.doc

Rob,

Attached please find the subject request for additional information (RAI). The draft of this RAI was sent to you on January 7, 2011. In your email dated January 11, 2011, you informed us that UniStar does not need a clarification phone call for this RAI and the RAI can be issued final.

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 schedule date for submitting your technically correct and complete response will be provided to the staff within the 30 day period so that the staff can assess how this information will impact the review schedule.

Your response letter should also include a statement confirming that the response does or does not contain any sensitive or proprietary information.

Thanks.

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

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**Hearing Identifier:** CalvertCliffs\_Unit3Col\_RAI  
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**Received Date:** 1/13/2011 8:44:20 AM  
**From:** Arora, Surinder

**Created By:** Surinder.Arora@nrc.gov

**Recipients:**

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Request for Additional Information No. 291 (eRAI 5322)

1/13/2011

Calvert Cliffs Unit 3

UniStar

Docket No. 52-016

SRP Section: 11.03 - Gaseous Waste Management System

Application Section: FSAR Sections 11.3 to 11.5

QUESTIONS for Health Physics Branch (CHPB)

11.03-3

Supplemental question to the response of NRC Letter RAI 255, Question 11.03-2

THIS RAI CONSTITUTES AN OPEN ITEM FOR CHAPTER 11

In the response dated Nov. 16, 2010, the applicant provides a revision of FSAR Section 11.3 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 revised site-specific dose assessment for gaseous effluent releases to the Chesapeake Bay, a cost-benefit analysis, and a deletion of previously proposed revisions to the departures and exemption reports (Part 7 of the application). The response also provides proposed revisions to FSAR Sections 11.4 and 11.5 even though RAI 255 did not address these two FSAR sections.

In part, the staff finds the revision adequate, as it was able to independently confirm the dose results to the maximally exposed individual and population, and cost-benefit analysis, and removal of prior departures. However, the staff noted a number of inconsistencies in the presentation of the revised results, statements of compliance with NRC regulations and guidance, and proposed revisions to the FSAR, given the concerns identified in RAI 255, Questions 11.03-2. In addition, this supplemental RAI also identifies issues on the proposed revisions of FSAR Sections 11.4 and 11.5 given that they were submitted for staff review as part of a single package prepared in response to RAI No. 254 and 255.

Based on the staff's review of responses to RAI 255, Question 11.03-2, the applicant is requested to address the following items in the proposed revision of FSAR Sections 11.3 to 11.5.

**I. FSAR Chapter 11.3**

**A. FSAR Section 11.3.3.3**

The listing of expected sources of radioactivity in gaseous process streams and gaseous effluents presented in FSAR Section 11.3.3.3 should be revised to include the turbine gland seals system as another significant contributor.

Provide the respective FSAR sections, as references, for the cited plant stack exhaust flow rate of 260,000 CFM as the sum of flow rates for several plant buildings.

#### B. FSAR Section 11.3.3.4

In FSAR Section 11.3.3.4, the discussion presenting the dose result of 1.47 mrem/yr (child bone) 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. Specifically, the dose result of 1.47 mrem/yr is the sum of five exposure pathways. The dose of 1.47 mrem/yr is derived as the sum of:  $1.67E-03 + 1.12E-04 + 1.33E-01 + 9.08E-01 + 4.23E-01$ . When using the maximum organ dose (0.868 mrem/yr, child bone) result presented in FSAR Table 11.3-7, the dose results of 1.47 mrem/yr cannot be duplicated since the sum of 0.868 and 0.423 mrem /yr equates to 1.29 mrem/yr. The applicant is requested to assess whether the dose of 0.868 mrem/yr (child bone) listed in FSAR Table 11.3-7 should be 1.043 mrem/yr instead. The dose of 1.043 mrem/year is based on the sum of:  $1.67E-03 + 1.12E-04 + 1.33E-01 + 9.08E-01$ . The applicant is also requested to qualify the basis of the dose summation in that discussion and in FSAR Table 11.3-7, Footnote 2.

FSAR Section 11.3.3.4 refers to details in FSAR Table 11.2-5 in demonstrating compliance with 40 CFR Part 190 from gaseous and liquid effluent releases. In reviewing the dose results presented in FSAR Table 11.2-5, the applicant is requested to integrate its response on doses due to gaseous effluents to the parallel supplemental RAI on liquid effluents such that when doses from liquid and gaseous effluents and external radiation are combined, the aggregated dose results will confirm compliance with 40 CFR Part 190 criteria, as implemented under Part 20.1301(e).

#### C. FSAR Section 11.3.3.5

Regarding compliance with the effluent concentration limits of Part 20, Appendix B, Table 2, Column 1, the discussion notes that the results presented in U.S. EPR Table 11.3-6 are bounding and the resulting conclusion of acceptability also applies to CCNPP Unit 3. The staff disagrees with this conclusion as the applicant has to demonstrate compliance for the site-specific condition of CCNPP Unit 3. The applicant is requested to review and revise the current conclusions in FSAR Section 11.3.3.5 and confirm compliance with the requirements of Part 20.1301 and 20.1302, and Part 20, Appendix B (Table 2, Column 1) effluent concentration limits, and unity rule summed up over all nuclides reported in gaseous effluents contained in routine effluent releases and anticipated operational occurrences.

#### D. FSAR Section 11.3.4

The discussion describing the results of the cost-benefit analysis and conclusion erroneously refer to “doses for liquid effluents.” The text should be revised to refer instead to gaseous effluents given that the analysis addresses the gaseous waste management system.

While the discussion refers to Regulatory Guide 1.110 in structuring the cost-benefit analysis, the guidance is not listed in the reference section. The applicant is requested to add Regulatory Guide 1.110 as a full reference in FSAR Section 11.3.5. Also, the applicant should determine whether the reference to NUREG-0017 (NRC 1985) is still needed given the restructured approach used in the updated cost-benefit analysis.

#### E. FSAR Table 11.3-2

FSAR Table 11.3-2 presents the origins of atmospheric dispersion and deposition parameters used in calculating population doses. A review of the cited references in FSAR Section 2.3.5 indicates that citations of supporting met data tabulations are incomplete. Specifically, the applicant is requested to review and correct the following observations:

1. The reference to FSAR Table 2.3-124 should include Table 2.3-125 for the full set of met data, since FSAR Table 2.3-124 presents met data only out to 5 miles from the plant, and FSAR Table 2.3-125 presents the balance of the met data out to 50 miles. The same correction should be made to the citation of FSAR Table 2.3-127 by adding Table 2.3-128 for the complete set of met data.
2. The reference to FSAR Table 11.3-10 for one set of met data is confusing since the atmospheric dispersion parameters listed in that table are the same as that given in FSAR 2.3-119. Note that FSAR Table 2.3-119 is also cited as a reference for undecayed and undepleted met data in FSAR Table 11.3-2. It is not clear as to why such a distinction is being made as to their references while the met data are the same. An explanation is warranted for technical clarification and use of met data.
3. FSAR Table 11.3-2 presents the source of atmospheric dispersion and deposition parameters used in calculating population doses. A review of Footnote 2 to this table qualifying the use of FSAR Sections 2.3.5 and 11.3 as supporting met data is confusing given the proposed substitutions of met data. Specifically, the applicant is requested to breakout Footnote 2 for each set of met data and provide the basis for the use and substitution of each, given that the cost-benefit analysis and dose calculations are stated to rely on Regulatory Guide 1.109 and NUREG/CR-4653 (GASPAR II computer code). The expanded series of footnotes should clearly address the basis and use of undecayed and undepleted X/Q data; decayed and undepleted X/Q data; decayed and depleted X/Q data; and ground deposition D/Q data.

## **II. FSAR Chapter 11.4**

### **A. FSAR Section 11.4.3**

The discussion refers to two EPRI reports (Nov. 2007 and April 2007), but this guidance on low-level radioactive storage is not listed in the reference section. It is noted that these two references are important to the strategy being proposed in minimizing the generation of Class B and C wastes and in stretching out the storage capacity of the radwaste processing building. The applicant is requested to add both EPRI reports as full references in FSAR Section 11.4.7.

## **III. FSAR Chapter 11.5**

There are no comments on the proposed revision to FSAR Section 11.5.