## CCNPP3COLA NPEmails

**From:** Arora, Surinder
**Sent:** Friday, January 22, 2010 1:57 PM
**To:** 'Poche, Robert'; 'cc3project@constellation.com'
**Cc:** CCNPP3COL Resource; Dehmel, Jean-Claude; Roach, Edward; Colaccino, Joseph; Jennings, Jason; Biggins, James; Vrahoretis, Susan; Hair, Christopher
**Subject:** DRAFT RAI No. 209 CHPB 4193
**Attachments:** DRAFT RAI 209 CHPB 4193.doc

Rob,

Attached is DRAFT RAI No. 209 (eRAI No. 4193). You have until February 5, 2010 to review it and decide whether you need a conference call to discuss any questions in the RAI before the final issuance. After the phone call or after February 5, 2009, 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**
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**US Nuclear Regulatory Commission**

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**From:** Arora, Surinder

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

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Request for Additional Information No. 209 (eRAI 4193)
DRAFT
1/22/2010

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 11.02 - Liquid Waste Management System
Application Section: 11.2

QUESTIONS for Health Physics Branch (CHPB)

11.02-1

CCNPP-3 FSAR Tier 2, Rev. 6, Sections 11.2.2 and 11.2.3 present information on liquid effluent discharges and doses to members of the public by incorporating by reference the corresponding FSAR sections of the U.S. EPR design certification. A comparison of the information presented in CCNPP-3 FSAR Tier 2, Rev. 6, Sections 11.2.2, 11.2.3, 10.4.5 and 2.1.1.3, and FSAR Figure 10.4-6 indicates that the information presented in the corresponding sections of the U.S. EPR is different and inconsistent with the characteristics of the Calvert Cliffs site used in confirming compliance with NRC regulations. Specifically, the following items were noted:

a. CCNPP-3 FSAR Tier 2, Section 11.2.3 does not address site-specific conditions in confirming that routine liquid effluent releases will comply with Part 20 (App. B, Table 2, Col. 2) effluents concentration limits. The CCNPP-3 FSAR should compare all design features and assumptions applied in Section 11.2 of the U.S. EPR Tier 2 FSAR and identify those features that are applicable to the Calvert Cliffs site and, for those that are not, provide site specific parameters with appropriate justifications. For example, a review of U.S. EPR, Rev. 1, FSAR Tier 2, Section 11.2.3 and Tables 11.2-5 and 11.2-9 indicates that dose results are based on different assumptions, such as discharge flow rates of 100 $ft^3$/s, 20 $ft^3$/s, and 39.3 $ft^3$/s under different conditions; use of irrigation pathway; use of fresh water site condition for individual dose estimates and salt water site conditions for population doses; and use of a dilution factor of 365 in estimating population doses. In CCNPP-3 FSAR Tier 2, Section 11.2.3, the applicant has not included a comparative analysis to confirm that assumptions and parameters used in dose modeling described in the U.S. EPR Rev. 1, FSAR, Tier 2, Section 11.2.3 apply to the specific conditions of the Calvert Cliffs site, including confirmation of offsite dose receptors based on the results of the most current the land-use census. In addition, Sections 5.4.1 and 5.4.2 of the CCNPP-3 ER presents assumptions and parameters that are different than that described in Section 11.2.3 of the U.S. EPR FSAR. As a result, the staff concludes that the regulatory compliance analyses presented in U.S. EPR Rev.1, FSAR Section 11.2 cannot be incorporated by reference in CCNPP-3 FSAR Tier 2, Section 11.2.3 as a substitute evaluation of radiological impacts associated with liquid effluent releases and compliance with NRC regulations.

b. CCNPP-3 FSAR Tier 2, Rev. 6, Section 10.4.5 and FSAR Figure 10.4-6 present information on the liquid effluent discharge path. A review of this information indicates that the description of the liquid effluent path is incomplete, starting from the boundary of the Radioactive Waste Processing Building (RWB) to the point of actual discharge into the environment. CCNPP-3 FSAR, Tier 2, Section 11.2.2 does not define the boundary of the discharge path beyond the LWMS effluent radiation monitor and isolation valve to the point of controlled discharge into the Chesapeake Bay for those portions of the balance-of-plant system that are site-specific, given the guidance of Regulatory Guides 1.143 and 1.206 and acceptance criteria of SRP Section 11.2. CCNPP-3 FSAR Tier 2, Section 11.2.2 should be revised to include descriptions of all design features and assumptions that are applicable to the Calvert Cliffs site and provide a complete description of the liquid effluent discharge path to the Chesapeake Bay.

c. A comparison of U.S. EPR, Rev. 1, FSAR Tier 2, Section 11.2.3.3 and Figures 11.2-1 and 9.2.5-1 against CCNPP-3 FSAR Sections 9.2.4, 9.2.5, 10.4.5, and 11.2 and Figures 9.2-2, 9.2-3, and 10.4-6 indicates that dilution streams from other plant systems are not fully accounted in the descriptions of the discharge path. It is not clear if the discharge from the sanitary waste water treatment plant is before or after the connection of the LWMS effluent discharge line to the piping going to the seal well. CCNPP-3 FSAR Sections 9.2.5 and 10.4.5 and Figures 9.2-3 and 10.4-6 do not describe the impact on plant blowdown rates and dilution factors in the event that the "alternate blowdown path" is selected during plant operation, and other plant process effluents (e.g., Turbine Building Plant Drainage). As result, the FSAR does not account for all balance-of-plant dilution streams going to the retention basin and seal well, does not provide an estimate of the blowdown rate out of the retention basin, does not describe the “alternate blowdown path” and its expected flow rates, and does not list the flow rate from the sanitary waste water treatment plant with which liquid radioactive effluent are mixed prior discharge to the Chesapeake Bay via the CWS outfall. As a result, the description of the liquid effluent discharge path and site-specific conditions are different for CCNPP-3 than that described in the U.S. EPR FSAR and, consequently, the staff concludes that the regulatory compliance analyses presented in U.S. EPR FSAR Rev. 1, Section 11.2 cannot be incorporated by reference in CCNPP-3 FSAR Tier 2, Section 11.2.3 as a substitute description of effluent releases and basis of associated dilution factors in assessing radiological impacts associated with liquid effluent releases and compliance with NRC regulations.

d. Under CCNPP-3 FSAR Tier 2, Section 2.1.1.3, the definition of the plant boundary for radioactive effluent releases does not identify the location of the CWS outfall in the Chesapeake Bay for liquid effluents. Rather, the discussion addresses compliance with Parts 34(a)(1)(ii)(D)(1) and Part 100 regulations associated with gaseous effluent releases during accident conditions and not during routine effluent releases. The commitment to demonstrate compliance with NRC regulations is incomplete as it does not identify the requirements of Part 20 (App. B, Table 2, Col. 2) for liquid

effluents released during routine operation; and offsite dose limits to members of the public under Parts 20.1301 and 20.1302; Part 20.1301(e) in complying with 40 CFR Part 190; and design objectives of Sections II.A and II.D of Appendix I to Part 50.

In light of the above, the applicant is requested to evaluate the following and revise the CCNPP-3 COLA by:

1. presenting in FSAR Tier 2, Section 11.2.2 descriptions of design features that are applicable to the Calvert Cliffs site, including balance-of-plant features, definition of the effluent discharge path from the boundary of the RWB to the point of release in the Chesapeake Bay, descriptions of plant blowdowns and other plant process effluents with which radioactive liquid effluents are mixed before discharge into the environment, associated plant blowdown and effluent flow rates used in assessing radiological impacts, change of the in-plant dilution rate whenever the plant operates in the "alternate blowdown path," confirm that radioactive liquid effluents will not be routed to the retention basin before discharge into the Chesapeake bay under specific operating conditions, and provide information supporting the applied Chesapeake Bay dilution factor.

2. using Calvert Cliffs balance-of-plant design features and site-specific information, revise CCNPP-3 FSAR Tier 2, Section 11.2.3 and describe the evaluation and present results demonstrating compliance with the effluent concentration limits of Part 20 (App. B, Table 2, Col. 2); and dose limits to members of the public under Parts 20.1301 and 20.1302; Part 20.1301(e) in complying with 40 CFR Part 190 for all exposure pathways; design objectives of Section II.A of Appendix I to Part 50 for dose receptors based on the current land-use census; and cost-benefit analysis of Section II.D of Appendix I to Part 50 and COL Information Item 11.2-1 using updated collective population doses. The applicant is requested to provide sufficient information for the staff to conduct an independent evaluation of the applicant's analyses in complying with NRC regulations and confirm consistency with the corresponding results presented in Section 5.4 of the CCNPP Unit 3 ER. The information should include assumptions used in calculating doses to maximally exposed individuals and collective population doses, and site-specific information on dose receptors and exposure pathways and default parameters used to calculate doses using Regulatory Guide 1.109 and the LADTAP II computer code (NUREG/CR-4013).

3. updating the regulatory description of the plant boundary for radioactive liquid effluents in CCNPP-3 FSAR Tier 2, Section 2.1.1.3 by including the requirements of Part 20 (App. B, Table 2, Col. 2), Parts 20.1301 and 20.1302, Part 20.1301(e), and Appendix I to Part 50. (Note: This observation also applies to gaseous effluents. It is recommended that as part of this RAI, the applicant extends the revision of FSAR Section 2.1.1.3 to address as well gaseous effluents generated during routine plant operation.)