

## CCNPP3eRAIPEm Resource

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**From:** Arora, Surinder  
**Sent:** Thursday, April 28, 2011 8:39 AM  
**To:** 'Poche, Robert'; 'cc3project@constellation.com'  
**Cc:** CCNPP3eRAIPEm Resource; Wang, Weijun; Cook, Christopher; Colaccino, Joseph; Steckel, James; Wilson, Anthony; Vrahoretis, Susan  
**Subject:** Draft RAI 307 RGS2 5741  
**Attachments:** Draft RAI 307 RGS2 5741.doc

Rob,

Attached is Draft RAI No. 307 (eRAI No. 5741). You have until May 12, 2011 to review it and decide whether you need a clarification phone call to discuss any questions in the RAI before the final issuance. After the phone call or on May 12, 2011, 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](mailto:Surinder.Arora@nrc.gov)

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**From:** Arora, Surinder

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

**Recipients:**

"CCNPP3eRAIPEm Resource" <CCNPP3eRAIPEm.Resource@nrc.gov>  
Tracking Status: None  
"Wang, Weijun" <Weijun.Wang@nrc.gov>  
Tracking Status: None  
"Cook, Christopher" <Christopher.Cook@nrc.gov>  
Tracking Status: None  
"Colaccino, Joseph" <Joseph.Colaccino@nrc.gov>  
Tracking Status: None  
"Steckel, James" <James.Steckel@nrc.gov>  
Tracking Status: None  
"Wilson, Anthony" <Anthony.Wilson@nrc.gov>  
Tracking Status: None  
"Vrahoretis, Susan" <Susan.Vrahoretis@nrc.gov>  
Tracking Status: None  
"Poche, Robert" <Robert.Poche@constellation.com>  
Tracking Status: None  
"cc3project@constellation.com" <cc3project@constellation.com>  
Tracking Status: None

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Request for Additional Information No. 307 (eRAI 5741)  
DRAFT  
4/28/2011

Calvert Cliffs Unit 3  
UniStar  
Docket No. 52-016  
SRP Section: 02.05.04 - Stability of Subsurface Materials and Foundations  
Application Section: 2.5.4

QUESTIONS for Geosciences and Geotechnical Engineering Branch 2 (RGS2)

02.05.04-31

In response to RAI Questions 02.05.04-26 and -27, you provided additional details on your settlement analysis, including the models and parameters that were applied. In order for staff to complete its review to ensure the stability of foundations, and in accordance with 10 CFR 100.23, please provide the following additional information:

1. In the RAI response you state that “for the Chesapeake Clay/Silt Stratum IIc, the consolidation test results should not be used in Terzaghi Consolidation Model for the CCNPP Unit 3 Site, and that the behavior is best represented by the in-situ tests as was done in the settlement analysis discussed in Section 2.5.4 of COLA FSAR Revision 7.” COLA FSAR Revision 7, 2.5.4.2.5.3 “Performance Properties Under Static Conditions,” states that “the selected values for the consolidation properties are based on average parameters obtained from laboratory testing.” Please clarify how the consolidation property parameters were determined if consolidation test results were not used, and provide a justification for the parameter values used in the settlement analysis. In addition, please clarify whether you took the standard design lateral-uniformity requirement into consideration for soil layers underneath the foundation.
2. Although you state that the settlement will be monitored during construction and describe measures that will be taken in the event differences occur between actual and predicted settlement, you did not state whether these methods will control the anticipated large total settlement at the CCNPP Unit 3 site. Please clarify if these methods will control the predicted large total settlement. Also, please discuss how the proposed measures are related to the U.S. EPR standard design construction sequence requirement.
3. In the RAI response you state that the pseudo-elastic analysis, as reported in the COLA FSAR Section 2.5.4, provides the best estimate of the settlement to be experienced by the CCNPP Unit 3 structures. However, staff's confirmatory analysis showed a much larger settlement using a non-linear Cam-Clay model, which is generally considered to be a realistic model for clay-type soils, such as the Chesapeake Clay/Silt Stratum IIc. Please justify why a non-linear model was not considered in your settlement estimate for the CCNPP Unit 3 Site.