CCNPP3COLA PEmails

From: Colaccino, Joseph
Sent: Wednesday, December 08, 2010 10:19 AM
To: Cook, Christopher
Cc: Steckel, James; Arora, Surinder; CCNPP3COL Resource
Subject: Re: Calvert settlement follow-up

Chris,

Thanks. I have asked Jim to re-engage your staff on the input due date. We will also ask UniStar if they can accelerate their submittal schedule.

Regarding the two other issues we discussed:

1) Regarding the follow up RAI on seismic PHA, please indicate in the RAI that this can be a potential open item in Phase 2 (while we typically do this when the input is submitted, it would be helpful in this situation).

2) Regarding the COL Item on sheer wave velocity, as we discussed, I would recommend that we take this up in the next DCWG public meeting as this crosses the DC and COL applications. The PM setting up this meeting will engage with you on this topic.

Thanks.

Sent from NRC Blackberry
Joe Colaccino
202-579-8772

From: Cook, Christopher
To: Colaccino, Joseph
Sent: Tue Dec 07 18:14:47 2010
Subject: Calvert settlement follow-up

Joe,
I had a chance to talk with my Sr Geotech (Weijun Wang) about the CCNPP settlement RAI. The DC site parameter at issue is indeed the maximum differential settlement of 0.5 inch/50 ft, not total settlement per se. However, the two are related. Staff's sensitivity analyses produced total settlements much larger than UniStar's FSAR values. Quantities this much greater cast doubt on the reasonableness of differential settlements less than 0.5 inch/50 ft. The RAI (see below) contains the settlement values, if interested.

Let me know if you have lingering questions. I'll grab Weijun and we can discuss more.

Chris

02.05.04-27 (Settlement calculation -2)
Results of settlement sensitivity analyses show that:

1. Settlements computed using a non-linear Cam-Clay model calibrated to the available tri-axial stress-strain data are on the order of 4.2 ft, as compared to 1.4 ft of settlement estimated using an elastic model.
2. When using the mean consolidation test data to develop Cam-Clay model parameters, settlements of the Nuclear Island are on the order of 2.2 ft. However, if lower bound (16th percentile) test data are used the computed settlements increase to about 5.5 ft.

Since the settlement sensitivity analysis results indicate that the potential differential settlements between buildings may be much greater than those estimated in the FSAR, discuss and justify the following regarding settlement of Category 1 structures and to ensure the stability of foundations at the CCNP site in accordance with 10 CFR 100.23:

1. Given the non-linear character of the soils at the site (as evidenced by the tri-axial tests results), justify the adequacy of the soil models used in predicting settlements for the CCNP site in the FSAR.
2. Given the wide range variation of consolidation properties for the tested soils and a lack of data sufficient to establish a verifiable spatial correlation of the properties, provide an assessment of how large differential settlements will be incorporated into the design of the NI structures given the relatively small differential settlement allowances in the standard design.
3. Given the expected large settlements and potential large differential settlements, sequencing of the construction process will be critical to assuring the assumptions used in the standard design are valid for the site. Provide a detailed discussion of the construction sequencing that will be used to assure that the design basis contained in the standard design is maintained based on the site specific settlement analysis.
4. Recognizing that actual settlements at this site are likely to be highly variable when compared to the settlements estimated prior to construction, settlement monitoring is essential. Please a) discuss why the proposed settlement monitoring program is sufficient; b) provide a detailed description of the actions required to evaluate measured settlements if they are inconsistent with the predictions; and c) discuss potential impacts and actions to the construction sequencing due to settlements that exceed predictions.

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From: Colaccino, Joseph

Created By: Joseph.Colaccino@nrc.gov

Recipients:
"Steckel, James" <James.Steckel@nrc.gov>
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"Arora, Surinder" <Surinder.Arora@nrc.gov>
Tracking Status: None
"CCNPP3COL Resource" <CCNPP3COL.Resource@nrc.gov>
Tracking Status: None
"Cook, Christopher" <Christopher.Cook@nrc.gov>
Tracking Status: None

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