PMSTPCOL NPEmails

From: Tekia Govan
Sent: Tuesday, November 18, 2008 5:45 PM
To: 'Bense, Richard'
Cc: STPCOL
Subject: Draft RAIs section 2.5
Attachments: RAI 1636.doc

Dick,

Please review the attached RAIs. If you feel we need a conference call to clarify the requested information, please contact me. If a conference call is not needed (please send an email) I will continue the formal process of issuing the RAIs to STPNOC.

All of these RAIs are from section 2.5.

Thanks

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"STPCOL" <STP.COL@nrc.gov>
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"'Bense, Richard'" <rhbense@STPEGS.COM>
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Request for Additional Information No. 1636 Revision 2

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 02.05.04 - Stability of Subsurface Materials and Foundations
Application Section: 2.5.4

QUESTIONS for Geosciences and Geotechnical Engineering Branch 1 (RGS1)

02.05.04-***

The supplemental dewatering information indicates that the drawdown will be a minimum of 3 feet below side-slopes; however, the temporary excavation slope stability analyses indicate that acceptable factors of safety require drawing down the phreatic surface to a minimum of 5 feet below the slope surface. In order for the staff to review the adequacy of the dewatering plan, please coordinate these two supplements.

02.05.04-***

The large strain elastic moduli for each of the clay layers were calculated using the average of values computed from Equation 2.5S.4-4, ($E = 600S_u$), and equation 2.5S.4-5, E=2G (1+m). The results were averaged using a weighted formula that favored the shear wave velocity-derived value 2:1, as in the case for the sand layers. Equation 2.5S.4-4 was derived from a study performed on Beaumont Clays and therefore would seem to be valid for the Beaumont clays at the South Texas site. Please explain why the two methods generally provide significantly different results, and why the shear wave velocity-derived results are favored by 2:1 in computing an average value for use in predicting immediate settlements.

02.05.04-***

The large strain elastic modulus for each of the sand layers were calculated using the average of values computed from Equation 2.5S.4-13, (E = 36N), and equation 2.5S.4-5, E=2G (1+m). The results were averaged using a weighted formula that favored the shear wave velocity-derived value 2:1, as in the case for the clay layers. Equation 2.5S.4-5 was derived from a study performed on New England sands and gravels and the results agreed with other relationships reported in the literature. Please explain why the two methods generally provide significantly different results, and why the shear wave velocity-derived results are favored by 2:1 in computing an average value for use in predicting immediate settlements.

02.05.04-***

The elastic modulus, E, for clay soils and coarse grained soils was evaluated using relationships found in Reference 2.5S.4-9, “Settlement of Two Tall Chimney Foundations”. The reference states that heavily over-consolidated clays are assumed to

behave in an elastic or pseudo-elastic manner when loaded at a level well below their pre-consolidation pressure. The reference says the same is true for sands. The derivation of the relationship for the clay was based on a loading of approximately half the pre-consolidation pressure. It is assumed that for this relationship to be valid for South Texas site, the same ratio of gross stress to pre-consolidation pressure would have to be approximately the same. Please compare the pre-consolidation pressure in each clay layer to the imposed stresses down to the maximum depth of interest. If the loading is greater than one-half the pre-consolidation pressure, please indicate why this relationship is still valid for computing immediate settlements at the South Texas Project.

02.05.04-***

The elastic modulus computed using equation 2.5S.4-5, E=2G (1+m), assumes strain in the range of 0.25% to 0.50%. Please indicate the level of strain in the sands and clays for which this relationship was used.