

## **PSEGESPeRAIPEm Resource**

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**From:** Chowdhury, Prosanta  
**Sent:** Wednesday, August 08, 2012 4:41 PM  
**To:** 'PSEGRAIResponses@pseg.com'  
**Cc:** PSEGESPeRAIPEm Resource; 'James.Mallon@pseg.com'; 'David.Robillard@pseg.com'; Segala, John; Silvia, Andrea; Roach, Kevin; Clark, Phyllis; McLellan, Judith; Vega, Frankie; Karas, Rebecca  
**Subject:** PSEG Site ESPA FINAL RAI 64 (eRAI 6607) SRP-02.05.04 (RGS1)  
**Attachments:** PSEG Site ESPA Final RAI 64 (eRAI 6607).pdf

Please find attached RAI 64 for the PSEG Site ESP Application. Following issuance of the draft of RAI 64 on July 30, 2012, a telecon was held on August 8, 2012, as requested by PSEG, to provide clarification on Questions 02.05.04-25 and 02.05.04-27. Based the discussion, the reference to "Savannah soils" as a basis for Darendeli's equations, appearing in the first sentence of Question 02.05.04-25 has been deleted, and Question 02.05.04-27 has been deleted in its entirety, since per PSEG's clarification on cross references to responses for RAIs 30 and 45, the NRC staff was able to locate the information sought in this Question. No other changes were necessary, and therefore, we are issuing this RAI as final.

The schedule we have established for review of your application assumes technically correct and complete responses within 30 calendar days of receipt of RAIs. For any RAIs that cannot be responded to within 30 calendar days, it is expected that a date for receipt of this information will be provided to the staff within the 30-calendar day period so that the staff can assess how this information will impact the published schedule.

If you have any questions, please contact me.

Prosanta Chowdhury  
Project Manager  
Licensing Branch 1 (LB1)  
Division of New Reactor Licensing  
Office of New Reactors  
301-415-1647

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**Sent Date:** 8/8/2012 4:40:48 PM  
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**From:** Chowdhury, Prosanta

**Created By:** Prosanta.Chowdhury@nrc.gov

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Request for Additional Information 64

Application Revision 1

FINAL

8/08/2012

PSEG Site ESP  
PSEG Power LLC, PSEG Nuclear LLC  
Docket No. 52-043

SRP Section: 02.05.04 - Stability of Subsurface Materials and Foundations  
Application Section: 2.5.4

QUESTIONS

02.05.04-22

**Supplement to RAI 41, Question 02.05.04-7**

In response to RAI 41, Question 02.05.04-7, you explained how possible variations in the estimated  $K_0$  (ratio of vertical to horizontal stress) were accounted for by using multiple test confining pressures for RCTS Testing. Since RTCS tests results were not used to estimate modulus reduction and damping variation with shear strains, and in compliance with 10 CFR 100.23(d)(4) and conformance to NUREG-0800, Standard Review Plan, Section 2.5.4, "Stability of Subsurface Materials and Foundations," please explain how variations in the estimated  $K_0$  were accounted for when using Darandeli equations. Also, please justify using  $K_0=0.5$  shown in calculation package ESP811\_PSEG\_CALC\_2251\_ESP\_GT\_006\_REV\_2.

02.05.04-23

**Supplement to RAI 41, Question 02.05.04-8**

In response to RAI 41, Question 2.5.4-8, you stated that you relied on SPT N-Values, USCS designation and  $V_s$  data to demonstrate that soils of the Vincentown and Hornestown formations were similar laterally across the site and thus, will have similar soil engineering properties. Average field SPT N-Values for the Vincentown and Hornestown formations were 37 bpf for NB-series borings and 57 bpf for EB-Series borings. In compliance with 10 CFR 100.23(d)(4) and conformance to NUREG-0800, Standard Review Plan, Section 2.5.4, "Stability of Subsurface Materials and Foundations," please explain how these formations were considered to be laterally uniform when considerable variations in average SPT N-Values exist between NB and EB borings. Also, please explain why a design value of 47 bpf was used for the Vincentown and Hornestown formations in SSAR Table 2.5.4.2.8 and justify how the selected single value statistically reflects the entire layer.

02.05.04-24

**Supplement to RAI 41, Question 2.5.4-11**

As part of the response to RAI 41, Question 2.5.4-11, you explained how soil strength properties for the Navisink formation were obtained. You mentioned that this formation's friction angle was obtained based on an empirical correlation included in the FHWA's geotechnical manual, which uses SPT N-Values as the main input. In compliance with 10 CFR 100.23(d)(4) and conformance to NUREG-0800, Standard Review Plan, Section 2.5.4, "Stability of Subsurface Materials and Foundations," please clarify if the equation used was the one referenced as part of the response to RAI 41, Question 2.5.4-15. Also, please explain why a design value was not included in SSAR Table 2.5.4.2-8 and justify the adequacy of the friction angle given the absence of lab testing and the sole reliance on empirical correlations.

02.05.04-25

**Supplement to RAI 41, Question 2.5.4-13**

As part of the response to RAI 41, Question 2.5.4-13, you justified using Darendeli's equations to characterize PSEG's site dynamic properties. You mentioned that these equations were applicable to the PSEG site given the similarities between the PSEG and Savannah site soils. You also mentioned that site settlement estimates were based on the elastic modulus derived using such equations. In compliance with 10 CFR 100.23(d)(4) and conformance to NUREG-0800, Standard Review Plan, Section 2.5.4, "Stability of Subsurface Materials and Foundations," please:

- i. Provide additional details on the similarities between the PSEG and Savannah soils in order to justify the validity of Darendeli equations to be used to characterize the PSEG site soils.
- ii. Explain how the use of these curves was considered appropriate and conservative to estimate site specific settlements. Also, justify using dynamic instead of static properties for this analysis.

02.05.04-26

**Supplement to RAI 41, Question 2.5.4-14**

As part of the response to RAI 41, Question 2.5.4-14, you stated that you relied on the area's geologic history (erosion and sea level changes) to justify describing site soils as overconsolidated. Laboratory testing was not performed to obtain consolidation data. In compliance with 10 CFR 100.23(d)(4) and conformance to NUREG-0800, Standard Review Plan, Section 2.5.4, "Stability of Subsurface Materials and Foundations," please provide the following details to further justify your conclusion regarding the soil's behavior:

1. Please indicate if laboratory tests on site subsurface soils will be performed to assess consolidation properties during the COLA phase.
2. Explain why the information from ESP subsurface investigations was not used to assess consolidation properties (e.g. Atterburg limits) to support your conclusions.