

March 3, 2009

Mr. Scott Head, Manager
Regulatory Affairs
STP Nuclear Operating Company
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 78 RELATED TO
SRP SECTION 02.05 FOR THE SOUTH TEXAS PROJECT COMBINED
LICENSE APPLICATION

Dear Mr. Head

By letter dated September 20, 2007, STP Nuclear Operating Company (STP) submitted for approval a combined license application pursuant to 10 CFR Part 52. The U. S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter.

To support the review schedule, you are requested to respond within **30** days of the date of this letter. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

S. Head

-2-

If you have any questions or comments concerning this matter, I can be reached at 301-415-6197 or by e-mail at Tekia.Govan@nrc.gov or you may contact George Wunder at 301-415-1494 or George.Wunder@nrc.gov.

Sincerely,

/RA/

Tekia V. Govan, Project Manager
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013

eRAI Tracking Nos. 1636 and 1677

Enclosure:
Request for Additional Information

S. Head

-2-

If you have any questions or comments concerning this matter, I can be reached at 301-415-6197 or by e-mail at Tekia.Govan@nrc.gov or you may contact George Wunder at 301-415-1494 or George.Wunder@nrc.gov.

Sincerely,

/RA/

Tekia V. Govan, Project Manager
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013

eRAI Tracking Nos. 1636 and 1677

Enclosure:
Request for Additional Information

cc:
Mr. William Mookhoek
Mr. Richard Bense

Distribution:
PUBLIC
NGE 1/2 R/F
GWunder, NRO
BAbeywickrama, NRO
WBieganousky, NRO
C. Munson, NRO
SBrock, OGC
RidsNroDserRsac
RidsNroDnrlNge2

ADAMS Accession No. ML090620295

NRO-002

OFFICE	RGS1/TR	RGS1/BC	NGE2/PM	OGC	NGE2/L-PM
NAME	WBieganousky	C. Munson	TGovan	SBrock	GWunder
DATE	11/13/2008	11/13/2008	03/03/2009	11/18/2008	11/19/2008

***Approval captured electronically in the electronic RAI system.**

OFFICIAL RECORD COPY

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)

02.05.04-16

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.

02.05.04-17

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.

02.05.04-18

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.

02.05.04-19

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

Enclosure

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.

02.05.04-20

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.

Request for Additional Information No. 1677 Revision 2

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co.
Docket Nos. 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)

02.05.04-21

STPNOC letter dated December 20, 2007, ABR-AE-07000014, Appendix A states in response to Issue 9(f), "STPNOC is aware of the potential for settlement and differential settlement at this site based on lessons learned during the construction of STP 1 and 2. STPNOC will develop a program to manage settlement and differential settlement, and will share the program with the NRC."

Because of the uncertainties in calculating settlement and the magnitude of the predicted settlements, please describe the acceptance criteria and method(s) you will use to ensure that essentially all the settlement is complete prior to fuel load. Please also describe how you will ensure that no excessive stresses will result in the any structures, systems or components of the Category 1 structures as a result of the settlements and differential settlements within and/or between safety-related structures.