December 7, 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. 297 RELATED TO SRP SECTIONS 03.08.01 AND 03.08.05 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. However, STP requested that **45** days are allowed to respond to both RAIs 4045 and 4048. The Phase 2 schedule will be adjusted accordingly. If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes.

If you have any questions or comments concerning this matter, I can be reached at 301-415-8484 or by e-mail at Tom.Tai@nrc.gov or you may contact George Wunder at 301-415-1494 or George.Wunder@nrc.gov.

Sincerely,

/RA/

Tom M. Tai, Senior Project Manager
ABWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013

eRAI Tracking No. 4045 and 4048

Enclosure:
Request for Additional Information

cc: William Mookhoek
John Price

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DATE	11/18/09	11/23/09	11/30/09	12/07/09

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

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Request for Additional Information No. 4045 Revision 3

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 03.08.01 - Concrete Containment
Application Section: FSAR 3.8

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)

03.08.01-6

Follow-up question to Question 03.08.01-3 (RAI 2962)

The applicant's response to Question 03.08.01-3 identifies the watertight doors that will be required to protect safety-related systems and components against a probable maximum flood (PMF) and states that these doors are designed as Seismic Category I for site-specific loads. The applicant also states that the watertight doors between the Control Building and the Service Building and between the Control Building and the Radwaste Building Access Corridor (1) provide access to and egress from the Control Building, (2) will normally remain open and will be closed only upon the indication of an imminent flood, and (3) are controlled by station procedures. Because these doors play a significant role in protecting safety-related systems, structures, and components (SSC) and constitute a special design feature, the staff requests the applicant to provide additional information about these doors and to update the FSAR as necessary, as stated below, in order for the staff to complete the evaluation:

(1) Include the seismic classification of the watertight doors in other relevant sections of the FSAR (e.g., Table 3.2-1) in order to ensure that these doors, including all components of the doors, will be appropriately treated for design, construction, installation, quality control, and maintenance, or explain why it is not necessary to do so.

(2) Identify the location of the additional watertight door between the Control Building and the Radwaste Building Access Corridor. This is not clear from the response to Question 03.08.04-3. Please identify the location of this door in a drawing.

(3) Clearly state in the FSAR the (a) site-specific loads and load combinations, (b) applicable codes and standards, (c) design and analysis procedures, (d) structural acceptance criteria, (e) materials and quality control, and (f) testing and in-service surveillance programs used to design, construct, install, and maintain these doors and all of the components following the guidance in SRP 3.8.4 (SRP Acceptance Criteria 1 through 7), or explain why it is not necessary to do so.

(4) Explain what mechanism is in place to ensure that the requirement for the normally open watertight doors to be closed upon the indication of an imminent flood will be included in the station procedures. Also confirm whether the adequacy of the station procedures to effectively close these doors when needed has been evaluated.

(5) Describe whether any redundancy features were considered for the watertight doors, particularly those that are normally open.

(6) Clarify what appears to be access doors between the Control Building and the Reactor Building that are not identified as watertight doors to be utilized for protection against external flooding. Since

there is a gap between these buildings, explain what design feature is provided to ensure that flood water cannot enter the Reactor Building and the Control Building through these access areas.

03.08.01-7

Follow-up question to Question 03.08.01-4 (RAI 2962)

The staff reviewed the applicant's response to Question 03.08.01-4 addressing the evaluation of standard plant structures for the increased flood level and needs the following additional information to complete the review:

(1) The applicant's response compares the out-of-plane shear and moment demands due to flood pressure with those due to the seismic load. The applicant did not include in its response any description or explanation about how the out-of-plane shear and moment demand for flood load and seismic load were obtained for the evaluation. Therefore, the staff requests the applicant to provide a detailed description of how the representative wall elements for the reactor building (RB) and the control building (CB) were selected for the evaluation, and how the reported shear and moment demands for flood and seismic load were determined.

(2) In its evaluation for impact of increased flood level on sliding and overturning stability, the applicant considered only the flood load acting on the bottom 6 ft of the above ground portion of the RB and the CB excluding buoyancy, and made a qualitative statement that the flood load is substantially less than the seismic load. Please explain why sliding and overturning of the structures due to flooding need not consider the hydrodynamic loads and the buoyancy effects on the structures, and provide a quantitative evaluation of sliding and overturning stability due to flooding. Please also update the FSAR to reflect that sliding and overturning of the RB and the CB were evaluated for the increased flood load on these structures.

(3) The applicant's response revises the factors of safety due to floatation for the RB and the CB, which are different from the values reported in Tables 3H.1-23 and 3H.2-5 of the ABWR DCD and in revised FSAR Sections 3H.1.6 and 3H.2.6. However, the applicant's response does not include the revision to the above ABWR DCD tables. Because the values of the floatation safety factors reported in DCD Tables 3H.1-23 and 3H.2-5 are no longer valid for the STP Units 3 and 4, the applicant is requested to address the issue appropriately.

03.08.01-8

Follow-up question to Question 03.08.01-5 (RAI 2962)

The applicant's response to Question 03.08.01-5 states that the changes in loads on the containment internal structures due to the increase in pool swell height and pressure will be addressed during the detail design phase. However, ABWR DCD Subsection 3H.1.5.5.2 describes the design of the containment internal structures, load combination (including pool swell loads), and analysis and design results. These are incorporated by reference in FSAR Section 3H. Also, pool swell loads are used in loading combinations for design of the containment structure, and analysis and design results for the containment structure are reported in Appendix 3H. Since the changes in loads due to increases in pool swell height and pressure on the concrete containment and containment internal structures are not addressed at this time, the applicant is requested to provide a quantitative evaluation and confirm that the increased pool swell height and pressure will not have an adverse impact on the design of the

concrete containment and the containment internal structures, and that it is appropriate to incorporate by reference the analysis and design results for the containment and the containment internal structure reported in Appendix 3H of ABWR DCD.

Request for Additional Information No. 4048 Revision 3

12/7/2009

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 03.08.05 - Foundations
Application Section: FSAR 3.8

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)

03.08.05-2

Follow-up to Question 03.08.05-1 (RAI 3324)

The applicant's response to RAI 03.08.05-1 states that "the differential settlements will be determined based on detailed settlement calculations considering the time rate of settlements and construction sequence. Additional information on settlements is provided in the response to RAI 02.05.04-30 (see letter U7-C-STP-NRC-090146 dated September 21, 2009)."

Although the applicant's response to RAI 02.05.04-30 provides general information on the settlement study, the applicant did not provide any information regarding magnitudes of the differential settlements considered for design of site-specific seismic category I structures, and how the differential settlements were included in the analysis of these structures. Therefore, the applicant is requested to clearly describe the magnitudes of differential settlements considered for design of site-specific seismic category I structures, and also explain how differential settlements were accounted for in the analysis of these structures. This information is needed so the staff can conclude that the design of site-specific seismic category I structures has appropriately considered the differential settlements.

Also, the applicant stated in its response that information pertaining to analysis and design results including the coefficient of friction used for sliding evaluation, calculated factors of safety for static and dynamic bearing pressures, lateral pressure on foundation walls, and design details of foundation walls and mat will be provided in a supplemental response to RAI 03.07.01-13 by December 31, 2009. The applicant is requested to either include the above information in its response, or include the information in the December supplemental response, and update the FSAR with relevant information, as appropriate.

03.08.05-3

In FSAR Section 3.8.6.2, "Site Specific Physical Properties and Foundation Settlement," the applicant referred to FSAR Sections 3H.6.4.2 and 2.5S.4 to address COL License Information Item 3.24, which required that the physical properties of the site-specific subgrade medium be determined, and the settlement of foundations and structures, including seismic category I, be evaluated. In FSAR Section 2.5S.4.10.4, the applicant provided a settlement evaluation of the structures and stated that "from the differential settlement value, angular distortions/tilts were estimated (based on average foundation plan dimension), and for all evaluated structures were within the acceptable limit of 1/300." It is not clear if the applicant implied that the ABWR DCD standard plant structures were designed using the above acceptable limit. Therefore, the applicant is requested to confirm that the angular distortions/tilts due to differential settlement determined for the STP site are enveloped by the corresponding values used for

design of ABWR DCD standard plant structures, and if not, provide justification for acceptability of angular distortions determined for these structures for the STP site. Please also explain how the site-specific differential settlements between adjacent buildings are considered acceptable in relation to their impact on tunnels and other commodities between these buildings for the standard plant structures. Please include pertinent references to the sources of any information used in the response. This information is needed so the staff can conclude that the applicant has completed all actions required by COL License Information Item 3.24.