

October 8, 2010

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 365 RELATED TO
SRP SECTION 2. 4 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 **45** 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

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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
ABWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013

eRAI Tracking No. 5101, 5102, and 5105

Enclosure:
Request for Additional Information

cc: William Mookhoek
Richard Bense

S. Head

-2-

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OFFICE	RHEB	RHEB	OGC	NGE2/PM	NGE2/L-PM
NAME	HAhn	RRaione	AWilson	TGovan	GWunder
DATE	9/16/2010	9/16/2010	9/20/2010	9/24/2010	10/7/2010

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

OFFICIAL RECORD COPY

Request for Additional Information No. 5101 Revision 3
South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 02.04.04 - Potential Dam Failures
Application Section: FSAR 2.4.4

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.04-14

Describe the methods selected to estimate the MCR embankment breach parameters and will also describe the bases for the range of the selected breach parameters. The breach parameters shall account for the MCR storage volume and depth as well as the geometry and construction materials of the embankment.

Provide FSAR updates to include: (1) a description of various methods used for estimation of MCR breach parameters, (2) description of the identification process of the most conservative breach scenario among all plausible scenarios, (3) justification why a specific scenario is chosen or why certain scenario(s) were excluded as plausible, (4) a description of the sensitivity of flood characteristics to the chosen range of breach parameters, (5) flow depth maps for the simulated floods, (6) flow velocity maps for the simulated floods, (7) peak flood discharge at safety-related structures, systems, and components (SSC), (8) duration of inundation at the safety-related SSCs, and (9) maximum estimated hydrostatic and hydrodynamic forces on the safety-related SSCs.

Characteristics of the design-basis flood (e.g., flow velocities, scour, deposition) and post-construction cover (e.g., surface material map, associated properties) are to be consistent in RAIs 5101 and 5105. If the design-basis flood is revised, the revised characteristic shall be applied in FSAR Sections 2.4S.12 and 2.4S.13.

02.04.04-15

Provide FSAR updates that address the issues raised above: (1) justification for reliability and accuracy of RMA2 predictions at the STP site, (2) selection and justification of a reasonable value for the DEPLIMIT parameter, (3) a description of results of the SED2D simulation(s) that use the selected value of the DEPLIMIT parameter, (4) a qualitative and quantitative description of sediment deposition and scouring in the powerblock area, (5) a description of the physical and hydraulic integrity of the powerblock surface following the flood event, (6) a description of sediment mass balance for the SED2D simulations, (7) sediment deposition height and scouring depth maps within the powerblock area, and (8) citations for precedents for the use of artificial sumps in applications of RMA2/SED2D.

Characteristics of the design-basis flood (e.g., flow velocities, scour, deposition) and post-construction cover (e.g., surface material map, associated properties) are to be consistent in RAIs 5101 and 5105. If the design-basis flood is revised, the revised characteristic shall be applied in FSAR Sections 2.4S.12 and 2.4S.13.

Enclosure

Request for Additional Information No. 5102 Revision 3
South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 02.04.05 - Probable Maximum Surge and Seiche Flooding
Application Section: FSAR 2.4.5

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.05-11

In RAI 2.4.5-10, the staff asked the applicant to (a) an analysis of the PMSS event using a conservative approach such as that by a storm surge model (e.g., SLOSH) with input from appropriate PMH models and (b) reasons why exposure of the outer face of the MCR embankment to the PMSS event would not lead to a breach. The applicant responded to RAI 2.4.5-10 in a letter dated July 27, 2010. The applicant further described its analyses in support of response to RAI 2.4.5-10 during a site audit conducted by the staff on August 31-September 1, 2010.

Provide the following information with applicable FSAR updates on: (1) a detailed description of the ADCIRC model including the wind-wave submodel, (2) a detailed description of supporting data sets including the topographic and bathymetric grid, (3) a list of conservatively selected plausible PMH scenarios, consistent with NWS 23 ranges of PMH parameters, used as input to ADCIRC, (4) a description and justification of why other plausible PMH scenarios were not selected as conservative, (5) a description of the sensitivity of the ADCIRC-simulated PMSS to PMH parameters, including radius to maximum winds, forward speed, track direction, and location of landfall, (6) a description of nonlinearity in estimated PMSS corresponding to various combinations of PMH parameters, and (7) the selected PMSS near the STP site including wind-wave runup.

Also provide information on: (8) a detailed description of various methods used to estimate current velocities during a PMSS event, (9) a detailed description and justification of simplifying assumptions made, (10) conservatively selected current velocities and durations for which these currents will affect the MCR embankment, and (11) justification, including relevant citations, for the ability of the grass-lined outer face of the northern MCR embankment to withstand the current velocities without erosion severe enough to cause an embankment breach.

Request for Additional Information No. 5105 Revision 3
South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 02.04.12 - Groundwater
Application Section: FSAR 2.4.12

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.12-51

Provide a conservative analysis and supporting data on the potential for infiltration and groundwater table rise during the design-basis flood event which results from a breach of the MCR embankment. Supporting data for the analysis must include (a) a diagram showing the ground surface cover conditions in the region, (b) hydraulic properties of surface and underlying materials sufficient to estimate infiltration rates and times, (c) an assessment of the survivability of the surface during the flood event (e.g., scour) especially near safety-related structures, and (d) an assessment of the aging of the surface with regard to seasonal climate extremes and the potential development of preferential infiltration pathways through the surface especially near safety-related structures. Using a conservative plausible alternative conceptual model of infiltration, the applicant shall provide an analysis of the potential groundwater table rise during the Design Basis Flood, and an analysis of the potential for saturation of the uppermost 2 feet (i.e., materials between plant grade and 2 ft below plant grade). If the impacts are thought to be potentially local and not throughout the powerblock, then the analysis should address whether local impacts would occur near or adjacent to safety-related structures.

Alternatively, if the design of the powerblock surface protects against infiltration during the design-basis flood, and scour and degradation of the designed powerblock surface are not plausible, provide the technical justification. If maintenance of the designed powerblock surface plays a role in the survivability of the surface, describe the maintenance effort.

The applicant shall provide FSAR updates to include a summary of either (1) the analysis (i.e., method and results) of potential infiltration during the flood event and its influence on both the water table elevation and saturation of the uppermost 2 ft of surface materials, or (2) the technical justification that the powerblock surface protects against infiltration during a design-basis flood event over the life of the plant. If the former (i.e., #1 above) is the approach selected, then the FSAR markup shall include a brief discussion of the alternative conceptualizations considered, and the justification for selection of the most conservative one.