August 31, 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. 360 RELATED TO SRP SECTION 9.01.01 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.

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. 4987

Enclosure:
Request for Additional Information

cc: William Mookhoek
James Agles
Loree Elton

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. 4987

Enclosure:
Request for Additional Information

cc: William Mookhoek
James Agles
Loree Elton

Distribution:
PUBLIC
NGE 1/2 R/F
GWunder, NRO
BAbeywickrama, NRO
JDonoghue, NRO
CVWert, NRO
SKirkwood, OGC
RidsNroDsraSrsb
RidsNroDnrlNge2

ADAMS Accession No.: ML102430147 NRO-002

OFFICE	SRSB/TR	SRSB/BC	NGE2/PM	NGE2/L-PM
NAME	CVWert	JDonoghue	TTai	GWunder
DATE	8/12/10	8/18/10	8/31/10	8/23/10

*Approval captured electronically in the electronic RAI system.

OFFICIAL RECORD COPY

Request for Additional Information No. 4987 Revision 3

8/30/2010

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 09.01.01 - Criticality Safety of Fresh and Spent Fuel Storage and Handling
Application Section: 9.1.1

QUESTIONS for Reactor System, Nuclear Performance and Code Review (SRSB)

09.01.01-6

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). In Section 1.2 of this report, it is stated that in the new storage vault the full density water scenario bounds the low density options due to the presence of fixed poison in the storage racks. No calculations or results were presented to justify this statement. Provide justification for this statement.

09.01.01-7

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 2.1 discusses the code validation for SCALE 5.1.

What was the calculated uncertainty at a 95%/95% level?

09.01.01-8

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 2.2 discusses the code validation for PHOENIX4.

What was the calculated uncertainty at a 95%/95% level?

09.01.01-9

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Within this presented methodology, PHOENIX4 is used for depletion calculations of the fuel. The report references CENPD-390-P-A, Rev. 0 when describing PHOENIX4. The staff reviewed the topical report and its associated SER to assure its applicable use within the framework of the STP spent fuel pool criticality analysis.

The staff notes that within the conclusions of the SER for CENPD-390-P-A, there are four conditions concerning the acceptance of PHOENIX4. Provide discussion that demonstrates that PHOENIX4 as used in the spent fuel pool criticality analysis for the STP fuel designs meets the four conditions.

09.01.01-10

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 2.2 discusses the code validation for PHOENIX4.

Provide additional information that describes which critical experiments and fission rate data was used in the PHOENIX4 validation for the spent fuel pool criticality analysis such that the staff can determine its applicability to the STP ABWR design.

09.01.01-11

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 2.3 discusses the peak reactivity determination and indicates that PHOENIX4 calculations are adjusted by comparisons with KENO calculation results. It is stated that the "KENO model does not represent the fuel bundle exactly as approximations are made...".

Identify the approximations made and discuss their effect on the calculations.

09.01.01-12

Section 2.3 of the STP technical report on spent fuel pool criticality (U7-C-STP-NRC-100136) discusses the peak reactivity determination.

What are the bundle in-core conditions and geometry used for the depletion calculations?

09.01.01-13

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 3.1 discusses the assumptions used throughout the criticality safety analysis.

a) What is the representative fuel design used in the analysis?
b) Were any burnable absorbers analyzed as part of the analysis?
c) Provide more description of how tolerences were modeled.

09.01.01-14

In response to RAI 4173 (09.01.01-3), South Texas Project provided a fuel storage racks criticality safety methodology report (WCAP-17246-P, Rev. 0). Section 3.2 discusses the postulated accident scenarios. It is stated that the seismic analysis bounds any reactivity caused by a reduction in intermodule spacing.

What is the reference for the spent fuel pool seismic criticality analysis?

09.01.01-15

The report submitted by STP (U7-C-STP-NRC-100136) in support of its response to RAI-9.1.1-3 provides a high-level overview of a general methodology. This is in conflict with the commitments provided by the applicant in the RAI response (U7-C-STP-NRC-100101) which stated that "a criticality analysis covering both the New Fuel Storage Racks (COL Item 9.1.6.3) and the Spent Fuel Storage Racks (COL Item 9.1.6.3) is being performed based on a baseline rack design using a representative fuel type. A report, WCAP-17246-P... will be provided by June 11, 2010 to support the NRC safety finding."

Please provide the criticality analysis as mentioned in U7-C-STP-NRC-100101. This report should include information supporting the conclusions that the requirements of 10CFR50.68 are met, such that the staff may perform a full review.