

PMSTPCOL PEmails

From: Tai, Tom
Sent: Friday, August 20, 2010 11:20 AM
To: Agles, James
Cc: STPCOL; Chappell, Coley; Mookhoek, William; Elton, Loree
Subject: STP - Draft RAI 4987 - Chapter 9.1.1
Attachments: RAI 4987 09.01.01-xx.doc

Jim,

Attached for your information is a draft of RAI 4987 with 10 questions on the fuel rack criticality analysis. These questions are supplemental to RAI 4173.

To make sure your staff thoroughly understand these questions and why the analysis did not address sufficiently staff's concern, I'd suggest we should have a telecom on Wednesday (8/25). I'd like to issue this RAI no later than the end of next week (8/27).

As soon as you can confirm the date and time, please let me know with the tie-line information so I can share with the technical reviewer.

regards

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Request for Additional Information No. 4987 Revision 3

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-***

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-***

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-***

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-***

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-***

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-***

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-***

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-***

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 tolerances were modeled.

09.01.01-***

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-***

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.