

August 10, 2009

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 301 RELATED TO
THE SRP SECTION 17.4 FOR THE SOUTH TEXAS COMBINED LICENSE
APPLICATION

Dear Mr. Head:

By letter dated September 20, 2007, South Texas Project Nuclear Operating Company (STPNOC) 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.

Mr. Scott Head

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If you have any questions or comments concerning this matter, you may contact me at 301-415-1146 or Raj.Anand@nrc.gov, or you may contact George Wunder at 301-415-1494 or George.wunder@nrc.gov.

Sincerely,

/RA/

Raj Anand, Project Manager
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013
eRAI Tracking No: 3089

Enclosure:
Request for Additional Information

cc: William Mookhoek

Mr. Scott Head

-2-

If you have any questions or comments concerning this matter, you may contact me at 301-415-1146 or Raj.Anand@nrc.gov, or you may contact George Wunder at 301-415-1494 or George.wunder@nrc.gov.

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Raj Anand, Project Manager
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cc: William Mookhoek

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NAME	SWilliams*	TFrye*	RAnand*	SBrock*	GWunder*
DATE	5/20/09	5/20/09	8/10/09	5/06/09	5/06/09

*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 3089

**South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 17.04 - Reliability Assurance Program (RAP)
Application Section: 17.3 and 17.4S Reliability Assurance Program**

QUESTIONS for PRA Licensing, Operations Support and Maintenance Branch 2 (ESBWR/ABWR Projects) (SPLB)

17.04-1

SECY 95-132, Item E, states "An application for advanced reactor design certification or a combined license must contain: ... (3) a list of the structures, systems, and components designated as risk significant; and...." Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP), which includes the following common cause failures that were added to the plant-specific probabilistic risk assessment (PRA) under departure STD DEP 19.3-1 ("Evaluation of Common Cause Failures") (see Tables 19K-1 and 19K-2 of the STP FSAR):

- Cooling Water Divisions A, B, & C (CCF)
- Cooling Water Divisions A & B (CCF)
- Cooling Water Divisions B & C (CCF)
- Cooling Water Divisions A & C (CCF)
- HPCF System (CCF)
- RHR Core Flood System Failure (CCF)
- RHR Suppression Pool Cooling Failure (CCF)

However, it is not clear from Section 19K as to what specific SSCs (e.g., check valves RSW-F001A through F, motor-operated valves RSW-F013A through F) are associated with these risk-significant common cause failures. Therefore, the staff requests that the applicant identify in Section 19K of the STP FSAR the specific SSCs that are in scope of the RAP associated with these risk-significant common cause failures.

17.04-2

Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP). The following components are deleted from Tables 19K-1 and 19K-2 of Section 19K of the STP FSAR, suggesting that these components may no longer be in scope of the RAP:

- RCIC Pres Sensor PIS-Z605 Miscalibrated
- RCIC Flow Sensor FT-007-2 Miscalibrated
- RHR Flow Transmitters (CCF Miscalibration)
- Level 8 Sensors (CCF Miscalibration)

However, this seems inconsistent with Table 19K-4 ("Failure Modes and RAP Activities") of the STP FSAR, which includes these components in RAP through incorporation by reference to Table 19K-4 of the ABWR DCD, Revision 4. The staff requests that the applicant clarify whether these components are in scope of the RAP and, if necessary, revise Section 19K of the STP FSAR accordingly.

17.04-3

Section 19K ("PRA-Based Reliability and Maintenance") of the STP FSAR, Revision 2, identifies the risk-significant systems, structures, and components (SSCs) in scope of the Reliability Assurance Program (RAP). In Section 19K, the risk significance of the mentioned Circulating Water System (CWS) pump circuit breakers is described inconsistently in the report. For example, the CWS pump circuit breakers are risk-significant under Section 19K.7 and Table 19K-4, which incorporates by reference the CWS pump breakers, while the CWS pump circuit breakers are not risk-significant under Section 19K.11.13. The staff requests that the applicant clarify whether the CWS pump circuit breakers are risk-significant and revise Section 19K of the STP FSAR accordingly.

17.04-4

Section 17.4S.1.1.1 ("Program Formulation and Organizational Responsibilities") of the STP FSAR, Revision 2, states "As the ABWR design certification applicant, General Electric (GE) was initially responsible for formulating D-RAP (Reference 1)." Reference 1 in this statement does not correspond to any references in Section 17.4S.11 ("References"). The staff requests that the applicant correct this inconsistency in the STP FSAR.

17.04-5

Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR, Revision 2, states that the scope of the design reliability assurance program (D-RAP) will also include risk-significant systems, structures, and components (SSCs) not modeled in the probabilistic risk assessment (PRA). This is consistent with the recommendations provided in SECY 95-132. However, the interface responsibilities of the expert panel described under Section 17.4S.1.1.2 ("Reliability Assurance Interface Coordination") of the STP FSAR appear to only address risk-significant SSCs modeled in the PRA. An example of this is provided under the first bullet of Section 17.4S.1.1.2, which states: "The Plant Designer panel member maintains the design interface to ensure that any proposed design changes that involve risk significant SSCs modeled in the PRA are identified and periodically reviewed..."

The staff requests that the applicant also address in Section 17.4S.1.1.2 of the STP FSAR the interface responsibilities of the expert panel related to risk-significant SSCs in scope of D-RAP that are not modeled in the PRA.

17.04-6

Section 17.4S.1.4 ("Methods of Analysis for Risk Significant SSC Identification") of the STP FSAR, Revision 2, states that the initial identification of the site-specific, risk-significant systems, structures, and components (SSCs) is based on the process described in Appendix 19K of the reference ABWR DCD. These risk-significant SSCs are included in the scope of the design reliability assurance program

(D-RAP). STP's process for maintaining, revising, and establishing new risk rankings for modified design is based on the methodology described in Section 17.4S.1.4 of the STP FSAR, which includes probabilistic risk assessment (PRA) and deterministic techniques. The staff requests that the applicant address the following comments and, if necessary, revise Section 17.4S.1.4 of the STP FSAR accordingly. These comments are related to the methodology for maintaining, revising, and establishing new risk rankings in Section 17.4S.1.4 of the STP FSAR, Revision 2:

- Section 17.4S.1.4.1 ("PRA Risk Ranking") of the STP FSAR describes the methodology for identifying risk-significant SSCs using the PRA and provides the criteria for identifying these risk-significant SSCs (i.e., a Fussell Vesely, FV, importance greater than 0.005 or risk achievement worth, RAW, greater than 2.0). It is not clear from Section 17.4S.1.4.1 of the STP FSAR whether common cause failure basic events would also be subjected to the RAW criteria of 2.0.
- As D-RAP enters the detailed design, procurement, fabrication and construction phase, RAWs and FVs may exist for various PRA models (e.g., internal events, internal fire, and internal flood). Section 17.4S.1.4.1 of the STP FSAR does not address how the risk importance criteria (i.e., FV greater than 0.005 and RAW greater than 2.0) would be applied to the various PRA models that compute RAWs and FVs (e.g., would the RAW/FV criteria be applied to each PRA model separately, or applied to the combined/integrated results of the PRA models).
- Section 17.4S.1.4 of the STP FSAR does not address the use of the following analyses to identify risk-significant SSCs:
 - The qualitative risk analyses (e.g., seismic margin analysis, SMA, and fire induced vulnerability evaluation, FIVE), and
 - The PRA models for which risk importance measures (e.g., RAW and FV) are not computed.

These analyses are important and should be considered for the identification of risk-significant SSCs in the scope of D-RAP. For example, SSCs under SMA are credited as part of the safe shutdown paths evaluated under the SMA. In addition to being capable of withstanding seismic events, these SSCs need to have high reliability and availability in order to perform their safe shutdown functions. NEI 00-04 ("10 CFR 50.69 SSC Categorization Guideline") provides several acceptable approaches for using these analyses to identify risk-significant SSCs.

- As stated in Section 17.4S.1.4.1 of the STP FSAR, SSCs or functions having a FV importance greater than 0.005 or RAW greater than 2.0 would be included in the scope of D-RAP and subjected to the approved quality assurance program description (QAPD) referenced in Section 17.5S of the STP FSAR. This criterion is consistent with industry practices and guidance. However, the terms "PRA High" and "PRA Medium" used in Figure 17.4S-2 of the STP FSAR are not defined and no risk importance criteria are associated with these terms.

17.04-7

As stated in Section 17.3.1 of the reference ABWR DCD, the results of Appendix 19K can be used as a "starting point" for the design reliability assurance program (D-RAP). Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR, Revision 2, states that the "initial" identification of the site-specific, risk-significant systems, structures, and components (SSCs) during the STP combined license application (COLA) preparation is based on the process described in Appendix 19K of the

reference ABWR DCD. As D-RAP enters the detailed design, procurement, fabrication and construction phase, it is important, however, to ensure that the list of risk-significant SSCs in scope of the D-RAP is sufficiently complete, because these SSCs are subjected to reliability assurance activities under the approved quality assurance program description (QAPD) referenced in Section 17.5S of the STP FSAR.

The staff requests that the applicant provide a plan in the STP FSAR for performing the following activities that are described in Section 17.4S.1 ("Identification of Site-Specific SSCs for D-RAP") of the STP FSAR. This ensures that the list of risk-significant SSCs is sufficiently complete to support D-RAP program activities during the detailed design, procurement, fabrication and construction phase.

- Identify the risk-significant SSCs not modeled in the probabilistic risk assessment (PRA).
- Implement STP's process for maintaining, revising, and establishing new risk rankings that is described in Section 17.4S.1.4 ("Methods of Analysis for Risk Significant SSC Identification") of the STP FSAR, which could introduce additional SSCs to the scope of D-RAP (i.e., the deterministic risk ranking process and the lower risk importance threshold criteria relative to that used in Appendix 19K of the reference ABWR DCD could introduce additional SSCs to the scope of D-RAP).
- Establish and utilize an expert panel with STP representation to: (a) augment PRA techniques in the risk ranking of SSCs using deterministic techniques, operating experience and expert judgment; and (b) validate and finalize the list of risk-significant SSC.

17.04-8

Sections 17.4S.6 ("Procedure Control") and 17.4S.1.2.4 ("Engineering Design Controls for SSC Identification") of the STP FSAR, Revision 2, describe the controls for procedures and instructions used for developing, coordinating, and implementing reliability assurance program (RAP) activities. As such, the RAP activities described in the STP FSAR should be prescribed by detailed procedures and accomplished in accordance with these procedures.

The staff requests that the applicant provide a plan in the STP FSAR to develop procedures for implementation of the RAP activities described in the STP FSAR.

Enclosure