April 16, 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. 95 RELATED TO SRP SECTION 08.02 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 301-415-4093 or by e-mail at Adrian.Muniz@nrc.gov or you may contact George Wunder at 301-415-1494 or George.Wunder@nrc.gov.

Sincerely,

/RA/

Adrian Muñiz, Project Manager
ABWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012
52-013

eRAI Tracking No. 2308

Enclosure:
Request for Additional Information

cc: William Mookhoek
Richard Bense

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

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Request for Additional Information No. 2308 Revision 2

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket Nos. 52-012 and 52-013
SRP Section: 08.02 - Offsite Power System
Application Section: SRP 8.2

QUESTIONS for Electrical Engineering Branch (EEB)

08.02-1

FSAR Subsection 8.2.1.2 specifies the symmetrical and asymmetrical interrupting ratings of the main generator circuit breaker. These values were reduced from those specified in the DCD. Identify the maximum fault available from the main generator and main step-up transformers and confirm that the breaker interrupting ratings are consistent with the available fault from the system. Also, provide supporting information pertaining to these issues.

08.02-2

In FSAR Subsection 8.2.1.2 it is stated that the 4.16 KV winding of the reserve auxiliary transformer (RAT) A can be aligned to support any of the three plant investment protection (PIP) buses and any of the Class 1E buses and has the capacity to support all three Class 1E buses. This is also true for RAT B. Indicate the interlocks provided to prevent closure of all six breakers and, thus, potentially overload the transformer.

08.02-3

In FSAR Subsection 8.2.1.2 it is stated that the 13.8 winding of RAT B is designed to be capable of supporting power generation (PG) Buses B1 and D1 via an intermediate 13.8 KV bus designated as CTG1. Based on Figure 8.3-1, a tie breaker connects bus CTG1 to bus CTG2 that receives power from RAT A. Discuss the interlocks provided between the transformer supply breakers and the tie breaker and between the supply and tie breakers and the bus feeders such that the RATs are not overloaded.

08.02-4

FSAR Subsection 8.2.1.3 states that the RATs are separated from the main power and unit auxiliary transformers by distance or barriers. Additionally, it is stated that separation between the two RATs is not sufficient to allow each to be considered an independent offsite power supply. A review of Figure 8.2-1 shows that a barrier is provided between the RATs, but not between these and the unit auxiliary transformers (UATs). Clarify the statement in subsection 8.2.1.3 and provide additional details regarding the separation provided by the design, including the type and size of barriers that would be used, and how these barriers meet the separation criteria.

Enclosure

08.02-5

FSAR Subsection 8.2.1.2.1 discusses the design and susceptibility of transmission lines to lightning. Identify the basic insulation level (BIL) specified for the 345 kV transmission lines, the switchyards, and substations listed in this section, and provide a comparison with the BILs that are utilized by other transmission lines in the general area for existing and proposed 345 kV transmission lines. Describe design features such as surge protection devices, grounding, and lightning protection provided for the switchyard and transmission lines and indicate how these systems will be periodically maintained and tested to assure their functionality.

08.02-6

FSAR Figure 8.2-2 indicates that the existing DOW 27 line runs underground between the switchyards for Units 1 and 2 and Units 3 and 4. Since undergroud cables are susceptible to moisture, identify the cable design features and/or in-situ programs that will be implemented to avoid or arrest the degradation of the cable insulation from the effects of the moisture (testing and inspection frequency of water accumulation and adequate corrective action if water accumulation is found).

08.02-7

FSAR Table 8.2-3 identifies the transmission line historical failure associated with STP Units 1 and 2. This table shows that a large majority of failure incidents were either unknown (166) or weather-related (147). Discuss how these incidents are being used in the design of the new switchyard and transmission lines.

08.02-8

FSAR Subsections 8.2.1.2.2 describes the criteria used in specifying the continuous current rating, interrupting duties, momentary rating and voltage rating for the switchyard circuit breakers, but no values are provided for each of these ratings. Provide details regarding the circuit breaker ratings specified and indicate why those ratings are adequate for the application. Additionally, indicate applicable ratings for disconnect switches.

08.02-9

FSAR Section 8.2.1.2.2 describes the protection provided for the switchyard and its components and indicates that the switchyard uses a primary and secondary relay scheme, and that for the main power transformers and RATs the protection scheme includes primary and backup protection. Provide specific details regarding the protection devices and schemes used for the switchyard and its components, including the UATs. Additionally, indicate whether protection schemes have addressed lessons learned from the event described in Information Notice 2005-15, “Three-Unit Trip and Loss of Offsite Power at Palo Verde Nuclear Generating Station.”

08.02-10

FSAR Section 8.2.1.2.2 describes the protection provided for the switchyard and its components. Discuss who is responsible for the coordination, setting, monitoring, maintenance, and testing of all protective relays. Also, discuss associated review and approval requirements by STP and/or grid reliability organization.

08.02-11

In FSAR Section 8.2.1.2.2, it is stated that the control cables for the switchyard breakers are routed through three parallel independent cable trenches. Describe the cables design features and the monitoring program that will be implemented to avoid or arrest the degradation of cable insulation from the effects of moisture.

08.02-12

FSAR Subsection 8.2.1.2.4 is titled "Unit Auxiliary Transformers." However, these transformers are not discussed in this subsection. This subsection appears to be a continuation of subsection 8.2.1.2.3. Verify the content of the two subsections and make appropriate changes.

08.02-13

FSAR Section 8.2.2.3 addresses grid analysis and indicates that the evaluation performed under various line outages showed that stable operation existed for all STP units under all second level transmission line contingency conditions. This evaluation does not appear to have addressed the simultaneous loss of multiple units. Address the impact of such events on the ability of the offsite power system to supply power to the safety loads for Units 3 and 4.

08.02-14

FSAR Section 8.2.2.2.3 addresses grid availability study. Discuss whether the study addressed load increases over the next 5-10 years, whether maximum winter and/or summer loads were appropriately accounted for and what is the frequency for updating the study.

08.02-15

As indicated in FSAR Section 8.1.1, ERCOT is the Independent System Operator (ISO) which oversees all generation and transmission functions. Discuss the responsibilities of the ISO and the STP organizations to assure the switchyard and transmission system operation and maintenance. Address communication protocols between plant Operations and the ISO regarding switchyard and plant-related events and the extent to which maintenance and modifications to the switchyard and substation will be reviewed, controlled, and approved through the STP process (i.e., 10 CFR 50.65). Additionally, discuss the communication that will be established between the plant and grid operators regarding grid reliability evaluations before performing "grid-risk-sensitive" maintenance activities which could increase risk under existing or imminent degraded

grid reliability conditions. Also, discuss the controls and alarm/indication for switchyard components that are available in the STP 3 and STP 4 control rooms.

08.02-16

FSAR Section 8.2.4.1 discusses periodic testing of offsite equipment and indicates that testing intervals will be established according to IEEE 338. Discuss the type and interval of routine inspection of the offsite system, such as, but not limited to structures, network lines, transformers, circuit breakers substation equipment, batteries, potential transformers, ground grid, and lightning arresters. Additionally, discuss the industry standards that will be followed for the switchyard protection system, monitoring, maintenance and testing.

08.02-17

FSAR Subsection 8.2.1.2 discusses the isolated phase bus duct and refers to FSAR Figure 8.3.1 for the bus duct rating. However, Figure 8.3.1 only identifies the rating of the bus duct sections that connect the output of the main generator to the step-up transformers. Revise Figure 8.3.1 to indicate the ratings of the bus duct sections that supply power to the UATs and provide the data required to confirm the capability of each section to carry maximum full load currents.