July 29, 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. 177 RELATED TO SRP SECTION 09.02.05 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. 3231

Enclosure:
Request for Additional Information

cc: William Mookhoek
James Agles

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*Approval captured electronically in the electronic RAI system.

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Request for Additional Information No. 3231 Revision 2

7/29/2009

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 09.02.05 - Ultimate Heat Sink
Application Section: 9.2.5 Ultimate Heat Sink

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

09.02.05-1
Question 12875

GDC 44 requires reliable operation of the ultimate heat sink (UHS) under all anticipated conditions. ITAAC 3.0-1.2a in Section 9 of the FSAR states that the RSW pump suction will be at 3.35 m above mean sea level (MSL). ITAAC 3.0-1.2a does not specify if the RSW suction elevation is a required minimum or maximum. The NRC staff cannot reconcile this number with Figure 1.2-35 presented in FSAR Section 21 of the COL application where the bottom of the pool is 4.3 m above MSL and the pump is 10 meters below the bottom of the pool (although the electronic copy of the figure is difficult to read). Nor does this elevation agree with Tier 2 Section 9.2.5.5.2(7) which states that the minimum water level is 1.83 m above the suction line's centerline. FSAR, Section 16, SR 3.7.1.2 states that the minimum level in the UHS basin is 0.91 meters with the reference level not provided. The applicant should resolve the discrepancies in the reactor service water pump suction elevation.

09.02.05-2
Question 12876

In the COL application Tier 2, Table 9.2-26, the data for the ultimate heat sink (UHS) basin temperature is missing. However, this data is shown in Figure 9.2-17. The NRC staff requests the applicant to complete the table.

09.02.05-3
Question 12877

The design of the ultimate heat sink (UHS) system needs to reject the required amount of heat under all conditions to satisfy GDC 44. The applicant did not state nor justify the amount of excess margins that are included in the design to account for uncertainties, component wear and aging effects, fouling of heat transfer surfaces and spray nozzles, strainer debris collection, etc. Identify in the FSAR the margins in the design and discuss why the specified margins are considered to be adequate

09.02.05-4
Question 12879

Regulatory Guide 1.27 states that the ultimate heat sink (UHS) be able to operate for 30 days without makeup, unless a very reliable water source is demonstrated. The COL application states that approximately 61 million kilograms is required to satisfy this criterion. However, the water level within the UHS basin that is equivalent to this inventory is not consistently stated within the application. FSAR Section 16.3.7.1 SR 3.7.1.1 states that the water level in the UHS basin is to be greater than 19.28 m

(This value is also stated in SR 3.7.2.1 and 3.7.3.1.). It is unclear where this level is to be measured from. Also, these levels are not consistent with the minimum level presented in FSAR Section 9.2.5.7.1 where the required water level is given as 23.55 m above mean sea level (MSL). Finally, none of these levels seems consistent with Figure 1.2-35 presented in FSAR Section 21 of the COL application where the minimum water level is found to be 20.3 m (66.5 ft) from the bottom of the pool or 14.2 m (46.5 ft) above MSL (although the electronic copy of the figure is difficult to read). Clarify in the FSAR the minimum water level required for 30 days operation and correct inconsistencies in the COL application

09.02.05-5
Question 12880

STP COL FSAR Section 9.2.5.1(3), Interface Requirement, states that the ultimate heat sink (UHS) water chemistry limits will not be exceeded after operation for 30 days without makeup. However, the application does not demonstrate that the water chemistry is acceptable after 30 days of water loss without makeup. The applicant should address this interface requirement within the COL application.

09.02.05-6
Question 12882

GDC 44 requires that the ultimate heat sink (UHS) be operable under all anticipated conditions to assure rejection of required heat loads. However, the COL application does not discuss the specific problems of corrosion, erosion and biological fouling that is specifically addressed by Generic Letter 89-13. This letter presents information on flow and pressure monitoring, maintenance, testing, inspection, and control functions that should be considered. The COL applicant should address how the South Texas design is to deal with these problems considering the two water sources that are proposed to be used.

09.02.05-7
Question 12884

GDC 44 requires that the ultimate heat sink (UHS) be operable under all anticipated conditions to assure rejection of required heat loads. STP COL FSAR Section 9.2.5.9 states that any components required for UHS operation of Divisions A and B can be operated from the remote shut down system (RSS). This implies that Division C is only operable from the main control room. However, nowhere within the FSAR is it stated that the any of three divisions can be operated from the main control room. Also, the “components required for UHS operation” are not itemized. The applicant should update the FSAR to include these details of the UHS operation and control. Operation of Division A and B of the UHS from the RSS is also required by ITAAC 3.0-1.4 presented in Part 9 of the FSAR. Here it states that Figure 3.0-1 illustrates where the controls are sent. However, Figure 3.0-1 does not specify where the displays and controls are sent. Since a single figure is provided, it is assumed that all three divisions are treated in a similar fashion, which is not consistent with FSAR Section 9.2.5. Finally, the acceptance criteria for ITAAC 3.0-1.4 states that the controls will exist in the main control room, and does not validate their existence in the RSS. The applicant should include more details in the ITAAC section, and ensure that these details are consistent with the design as presented in Tier 2.