



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

December 20, 2007
ABR-AE-07000014

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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South Texas Project
Units 3 and 4
Docket No. 52-012 and 52-013
Resolution of Docketing Issues

- References:
1. Letter, D. B. Matthews to M. A. McBurnett, "Docketing of the Combined License Application (COL) for South Texas Project (STP), Units 3 and 4," dated November 29, 2007 (ML073320290)
 2. Letter, D. B. Matthews to M. A. McBurnett, "Acceptance Review for the Combined License Application for South Texas Project (STP) Units 3 and 4," dated November 16, 2007 (ML073200761)

Reference 1 stated that the COL application for STP Units 3 and 4 was acceptable for docketing, but requested resolution of twelve issues set forth in Enclosure 1 to the letter. Attachment 1 to this letter provides the requested resolution.

Reference 2 included two issues that arose during the NRC acceptance review and which were resolved prior to docketing. The resolution of those two issues is included in Attachment 2 for completeness.

Attachment 3 tabulates new commitments made in this letter.

If there are any questions regarding the resolution of these issues, please contact Greg Gibson at (361) 972-4626.

M. A. McBurnett
Vice President,
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jtc

Attachments:

1. Resolution of Issues Identified During the Docketing of the Combined License Application for South Texas Project, Units 3 and 4
2. Issues Resolved During NRC Acceptance Review
3. Commitments

D079
NRO

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ATTACHMENT 1

Resolution of Issues Identified During Docketing of the Combined License Application for South Texas Project, Units 3 and 4

Issue 1

Digital Instrumentation and Control: Standard Departure STD DEP T1 3.4-1 addresses Tier 1, and Tier 2 safety-related instrumentation and control (I&C) architecture. This departure is not adequately described in that a) the justification for this departure does not provide a discussion of the compliance of the ABWR I&C architecture with current requirements (i.e., IEEE-603-1991) as required by 10 CFR 52.79(a)(41); b) the departure does not include a sufficient level of detail for the staff to reach its safety conclusion as required by 10 CFR 52.79(a)(5); and, c) the departure does not provide a plan and schedule for the implementation of the I&C design acceptance criteria (DAC) which, though not a regulatory requirement, was requested by Section C.III.5.1 of Regulatory Guide 1.206.

Response:

- a) Departure T1 3.4-1 has been reviewed against the current SRP requirements and is in full compliance with not only the reference ABWR DCD but the updated requirements of the NUREG-0800, Chapter 7, Rev. 5 (March 2007). The results of this review were provided in Reference 1.

To demonstrate compliance with 10 CFR 52.79(a)(41), STP Nuclear Operating Company (STPNOC) commits to update the Final Safety Analysis Report (FSAR) to explicitly reference only IEEE-603 and incorporate any additional compliance items from IEEE-603 as they relate to this departure. STP commits to include this material as part of COLA Revision 1. [Commitment 1]

- b) To assist the staff in reaching their safety conclusion as required by 10 CFR 52.79(a)(5), the following information expands the description of the design changes provided in COLA Part 7, Section 2.1 for Standard Departure T1 3.4-1. This departure can be characterized into three primary changes:

1. Elimination of obsolete data communication technology

The departure eliminates references to the Essential Multiplexer System (EMS) and the Non-Essential Multiplexer System (NEMS) originally envisioned in the ABWR architecture and replaces them with separate and independent system level data communication capabilities. The original concept was based on a common EMS, which could be used by multiple safety-related, digitally-based protection systems. This departure defines separate dedicated data communication for each safety-related

digital platform, including separate and independent data communication for each division within a system.

In addition, the 1996 ABWR DCD identified use of the data communication standard ANSI-X3 series, Fiber Distributed Data Interface (FDDI), as the communication protocol for the EMS. FDDI is an obsolete technology and no longer used. The safety-related data communication will use a combination of proprietary network data communication and dedicated point-to-point communication to fully meet the defined data communication functional requirements.

DCD Tier 1 Subsection 2.7.5 provides the functional design of the data communication functions identified as the Essential Communication Functions (ECF) and the Non-Essential Communication Functions (NECF). All of the original Design Acceptance Criteria (DAC) and Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) associated with the EMS and NEMS have been retained as requirements for the ECF and NECF.

The elimination of the multiplexer concept required all references to the system(s) and its primary components to be replaced with a generic data communication reference. The terms EMS and NEMS were eliminated along with Remote Multiplexer Unit (RMU) and Control Room Multiplexer Unit (CMU).

The communication functions are described in FSAR Sections 7.2, 7.3 and 7.9S.

2. Elimination of unnecessary inadvertent actuation prevention logic and equipment

The ABWR DCD described the design of the Engineered Safety Features (ESF) actuation outputs as being fully redundant within each division of the ESF digital controls systems. This design was to minimize the potential for false actuation of ESF components. In the design, each output was processed through two redundant sets of hardware and a final two-out-of-two (2/2) logic decision was to be performed on a component level. Both sets of outputs had to demand actuation before a component would actually respond. As part of the detailed design of the ABWR ESF digital controls, it was determined that only selected ESF components required the redundant actuation prevention logic. If actuated during normal plant operation, most of the ESF components do not have an adverse impact on the safety or operation of the plant. The limited set of components that should not be actuated during normal operation, such as the main steam isolation valves, are provided with redundant actuation equipment and logic.

The complexity of implementing the fully redundant actuation logic was found to be a detriment to the design, and significantly increased the required maintenance and testing while providing no increase in true plant reliability. As a result, the redundant actuation logic is only implemented for components that may impact plant safety or operation if actuated during normal plant operation.

3. Clarifications of digital controls nomenclature and systems

The ABWR DCD defined many functional design requirements in terms typically reserved for hardware. Examples include the terms "module," "unit," and "system." The terminology was corrected to refer to the requirement as a "function" to eliminate the confusion associated with purely functional requirements and not physical requirements defined in the DCD. Examples include:

Digital Trip Module (DTM) to Digital Trip Function (DTF)

Trip Logic Unit (TLU) to Trip Logic Function (TLF)

Safety System Logic Unit (SLU) to Safety System Logic Function (SLF)

Plant Computer System (PCS) to Plant Computer Function (PCF)

Essential Multiplexer System (EMS) to Essential Communication Function (ECF)

In addition, to better define the functional design and implementation of the digital controls platforms, specific I&C system names were assigned to the ESF digital controls systems and the Reactor Protection System (RPS). The digital controls responsible for the ESF systems are designated as the ESF Logic & Control System (ELCS). The RPS functions are implemented in two separate I&C systems: the Reactor Trip & Isolation System (RTIS) and the Neutron Monitoring System (NMS). The term Safety System Logic & Control (SSLC) was clarified as a general term used to cover all of the logic and controls associated with safety-related control systems.

The nomenclature changes required several sections of the ABWR DCD to be updated for the STP 3&4 COLA to make all sections consistent. However, it should be noted that these changes only involved terminology and did not cause any changes to the safety-related I&C system architecture.

- c) The overall project schedules are still being developed and the schedule for the DAC items cannot be immediately provided. STPNOC commits to provide the requested plans and schedules to the NRC by March 31, 2008. [Commitment 2] This is well in advance of the ITAAC schedule submittal date specified in 10 CFR 52.99(a), which states that the ITAAC schedule must be submitted within one year after issuance of the COL.

Issue 2

Structural: The staff found the following potential Tier 1 changes. These changes were not identified in the COL application, nor were exemptions sought under 10 CFR 52.63(b)(1).

- a) *the required shear wave velocity for the reactor building design was changed from a lower bound of 1000 ft/sec to an average shear wave velocity of greater than 1000 ft/sec.*
- b) *the required shear wave velocity for the radwaste building design changed from a lower bound of 1000ft/sec to a minimum of 743 ft/sec; and*

- c) *the peak ground acceleration for the radwaste building design changed from the required value of 0.3 g to 0.15 g.*

Response:

- a) The ABWR DCD analysis was based on theoretical data for an ideal typical soil column. In the actual site situation, some thin layers of material were encountered in which lower shear wave velocities were calculated. These velocities were not characteristic of the entire vertical soil column. An industry-accepted weighted average technique was used to develop a single shear wave velocity which is characteristic of the entire soil column.

In response to ESBWR NRC RAI 3.7-31, GE-Hitachi (GEH) provided a method of determining an equivalent uniform shear wave velocity by utilizing weighted average shear wave velocities to depths of two times the largest foundation dimension. The GEH response stated:

DCD Section 3.7.5.1 item (3) will be revised to read "The equivalent uniform shear wave velocity (V_{eq}) over the entire soil column is no less than 300 m/sec (1000 ft/sec) at seismic strain, which is a lower bound value after taking into account uncertainties. V_{eq} is calculated to achieve the same wave traveling time over the depth equal to the embedment depth plus 2 times the largest foundation plan dimension below the foundation, as follows:

$$V_{eq} = \frac{\sum d_i}{\sum \frac{d_i}{V_i}}$$

Where d_i and V_i are the depth and shear wave velocity, respectively, of the i th layer."

Based on this response, the NRC closed the RAI.

During development of STP 3 & 4 FSAR Subsection 2.5S.4, GEH transmitted this method of determining shear wave velocity to Bechtel with an attachment from the GEH ESBWR Tier 1 DCD, Revision 3. Bechtel performed the calculations for the STP 3 and STP 4 Reactor Buildings in support of the development of FSAR Subsection 2.5S.4.

In FSAR Subsection 2.5S.4.4.2.3, discussion is provided on calculating site-specific equivalent uniform shear wave velocity utilizing the same approach that was approved for the EWBWR. Weighted average shear wave velocities were calculated for both the STP 3 and STP 4 Reactor Buildings to depths of two times the largest foundation dimension. Shear wave velocity values of *in situ* soils were considered between El. 61 ft (the level of Reactor Building over-excavation) and El. -443 ft (two times the maximum Reactor Building foundation dimension of 196 feet or 392 feet below the Reactor Building underside foundation at El. -51 ft). The shear wave velocity of the concrete fill between the underside of foundation (El. -51 ft) and the over-excavation level (El. -61 ft) was not included in the weighted averages. The resulting weighted average shear wave velocities were 1250 ft/sec for the STP 3 Reactor Building and 1243 ft/sec for the STP 4 Reactor Building.

- b) The required minimum shear wave velocity for the Radwaste Building will be reevaluated as part of the Tier 1 departure for the Radwaste Building design described in the response to Issue 2 c) below.
- c) STPNOC's initial assessment was that the change in the structural design of the Radwaste Building from 0.3g to 0.15g did not represent a departure from the Site Parameters in Tier 1, because the STP site complies with the 0.3g Site Parameter in Tier 1. However, rather than contest this issue with the NRC, STPNOC will modify the proposed change to the Radwaste Building seismic design to indicate that the change constitutes a Tier 1 departure and will modify the COLA appropriately in Revision 1, including requesting an exemption from Tier 1. (Commitment 3)

Issue 3

Radwaste Building: Changes were identified as Tier 2 and not requiring prior NRC approval. STP did not appear to recognize the Tier 1 changes identified in 2 b) and c) above. STP did not provide the design detail of the radwaste building to the level of detail contained in the DCD.

Response:

As stated above, notwithstanding STPNOC's initial assessment (discussed above), STPNOC will modify the proposed change to the Radwaste Building seismic design to indicate a Tier 1 departure and will modify the COLA appropriately for Revision 1.

STPNOC will also be taking a departure from the Tier 2 design of the radwaste building to change its classification from Seismic Category I to non-seismic. As stated in Subsection 3.8.4 of NUREG-1503:

Because GE elected to design the radwaste building substructure to remain structurally intact during an SSE to help contain liquid from a possibly ruptured tank, the radwaste building substructure also is included in this safety evaluation, although it does not house any safety-related systems and components, and hence, is not seismic Category I.

As stated in FSAR Table 3.2-1 and Subsection 3.8.4, the STP 3 & 4 radwaste building (RWB) substructure is inappropriately classified as a seismic Category I structure. This will be modified in Revision 1 to the COLA. As stated in FSAR Appendix 3H3.5, the STP 3&4 RWB substructure utilizing the reference ABWR DCD design is structurally adequate. This will be confirmed for the as-built condition per DCD Subsection 2.15.13 ITAAC.

This change in the seismic classification obviates the need for additional structural detail for the RWB in the FSAR. Nevertheless, further design details for the RWB will be available for NRC review and audit during the design development, which should be in the fourth quarter of 2008 (to be confirmed by February 2008).

Issue 4

Ultimate Heat Sink: The COL application did not provide a design for the ultimate heat sink, reactor service water pump houses, or reactor service water piping tunnel; therefore, COL information Items 3.3, 3.4, and 3.24 are left inadequately addressed, and the staff cannot determine whether or not your application is in conformance with 10 CFR 52.79(a)(5).

Response:

The design of the Ultimate Heat Sink (UHS) as set forth in 10 CFR 52.79(a)(4) is presented in FSAR Section 3H.6, which also meets the RG 1.206. The as-built condition of the UHS will be confirmed with the design per the site-specific ITAAC included in COLA Part 9, Section 3. Further details of the UHS design will be provided by the third quarter of 2008 as the design develops for construction in accordance with FSAR commitment COM 3H-2.

COL Information Item 3.3 states:

All remainder of plant structures, systems and components **not designed for wind loads** [emphasis added] shall be analyzed using the 1.11 importance factor or shall be checked that their mode of failure will not effect the ability of safety-related structures, systems or components from performing their intended safety functions.

FSAR Subsection 3.3.3.3 addresses this COL Information Item.

The scope of FSAR Appendix 3H.6 is site-specific seismic Category I structures, which include the

- UHS, including a cooling tower enclosure for each unit and a storage basin that is shared by STP 3 & 4. The basin and cooling tower enclosures will share a common foundation with the two Reactor Service Water (RSW) pump houses (one for each unit), which are also addressed in this appendix.
- RSW piping tunnel for each unit.

FSAR Appendix 3H.6.4.3.2 states "The severe environmental load considered in the design is that generated by wind." Therefore, COL Information Item 3.3 does not apply to the UHS, RSW pump houses, and RSW piping tunnel.

COL Information Item 3.4 states

All remainder of plant structures, systems, and components **not designed for tornado loads** [emphasis added] shall be analyzed for the site-specific loadings to ensure that their mode of failure will not effect the ability of the Seismic Category I ABWR Standard Plant structures, systems, and components to perform their intended safety functions.

FSAR Subsection 3.3.3.4 addresses this COL Information Item.

FSAR Appendix 3H.6.4.3.3.1, which includes the UHS, RSW pump houses, and RSW piping tunnel, states:

With the exception of the RSW piping tunnel, which does not require the consideration of a tornado wind pressure, tornado wind pressures are computed using the procedure described in Chapter 6 of ASCE 7, in conjunction with the maximum wind speed defined above and the following parameters:

- Importance factor 1.15
- Velocity pressure exposure coefficient 0.87
- Topographic factor 1.0
- Wind directionality factor 1.0

The designs of the UHS basin and the RSW piping tunnel do not require the consideration of a tornado differential pressure. Although the UHS cooling tower enclosures and the RSW pump houses are partially vented, they are evaluated for the specified differential pressure.

Therefore, COL Information Item 3.4 does not apply to the UHS, RSW pump houses, and RSW piping tunnel.

COL Information Item 3.24 states:

Physical properties of the site-specific subgrade medium shall be determined and the settlement of foundations and structures, including Seismic Category I, will be evaluated.

FSAR Subsection 3.8.6.2 addresses COL Information Item 3.24 and states “Physical properties of the site-specific subgrade medium and the settlement of foundations are assessed in Section 3H.6.” The reference should have been to FSAR Subsection 2.5S.4.10.4, which specifically addresses foundation settlement. This reference will be corrected in COLA Revision 1. [Commitment 4]

Operational aspects of the UHS and RSW system required by 10 CFR 52.70(a)(5) are discussed in FSAR Subsection 9.2.5.

Issue 5

Hydrological Engineering: The COL application does not contain the information in the level of detail recommended by RG 1.206, Section C.I.2.4 in regard to a) effects of sediment deposition caused by main cooling reservoir breach, b) effects from tsunamis caused by potential marine landslides, or c) identification of potential critical groundwater pathways. Without this information, the staff cannot determine whether or not the requirements of 10 CFR Part 50, Appendix A, General Design Criterion 2; 10 CFR 52.17(a)(1)(vi); 10 CFR 100.20(c); and 10 CFR 100.23(d)(3) are met.

Response:

- a) Sediment deposition and erosion from upstream dam failures is discussed in FSAR Subsection 2.4S.4.3.3. The sediment deposition during the flood resulting from upstream dam failure does not affect the safety-related SSCs and functions at STP 3 & 4 because

they are located at higher grades than the surrounding area. This satisfies the requirements of SRP 2.4.4 III.5.

Failure of onsite water control or storage structures, i.e., the main cooling reservoir, is analyzed in FSAR Subsection 2.4S.4.2.2. Breach of the main cooling reservoir is used to set the maximum flood level for protection of safety-related SSCs at STP 3 & 4. This satisfies the requirements of SRP 2.4.4 III.6.

- b) The reference cited, "The Current State of Knowledge Regarding Potential Tsunami Sources Affecting U.S. Atlantic and Gulf Coasts," was not available prior to the submittal of the STP Units 3 & 4 COLA. The information in this reference will be reviewed and FSAR Subsection 2.4S.6 will be updated if required by February 15, 2008.

[Commitment 5]

- c) Three off-site groundwater migration pathways are evaluated in FSAR Subsection 2.4S.12. The evaluated pathways are the Upper Shallow Aquifer, the Lower Shallow Aquifer, and the Deep Aquifer.

The assumption used in FSAR Subsection 2.4S.12 for the postulated Upper Shallow Aquifer pathway concerning discharge to Kelly Pond will be validated using specific hydrogeologic data by March 31, 2008. [Commitment 6]

The number of observation wells (28) used to develop groundwater level contour maps and to predict pathways will be evaluated and FSAR Subsection 2.4S.12 modified as required. STPNOC will develop a detailed schedule for this activity by February 15, 2008. [Commitment 7]

The plotted contour maps provided in FSAR Subsection 2.4S.12 will be evaluated and updated as required considering construction of the proposed units and that plant structures and footings could penetrate the Lower Shallow Aquifer. This effort will be completed by March 31, 2008. [Commitment 8]

Issue 6

Technical Specifications: The COL application Technical Specification and Technical Specification Bases contain a large quantity of bracketed information and a significant number of empty brackets. Though some of this information (e.g., that associated with design acceptance criteria) is not available, much of the bracketed information will be required before issuance of a COL. Without this information, the staff cannot determine whether or not the application meets the requirements of 10 CFR Part 52 Appendix A, IV.A.2.c for COL information Item 16-1, neither can we determine whether or not the Technical Specifications meet the requirements of 10 CFR 50.36.

Response:

As indicated in FSAR Section 16.1.1, the generic Technical Specifications contain brackets to designate values that were not available at the time of design certification, e.g., the values were dependent upon as-procured information. As stated in FSAR Section 16.0:

STPNOC has provided supplemental information specified in the generic Technical Specifications as “[]” where information is available. The remainder of the bracketed information will be provided following detailed design, analysis, and/or equipment selection, installation, and testing.

STPNOC anticipated a license condition to require that the bracketed information be filled-in via a license amendment prior to fuel load. This process is allowed by RG 1.206, Sections C.III.16.2 and C.III.4.3, for cases in which information cannot be provided at the time of the COL application because the information depends upon as-built or as-procured information.

In a conference call with the NRC staff on November 6, 2007, after submission of the STP COLA, the staff expressed that the brackets should be filled-in prior to issuance of the COL by the NRC, except in cases in which the brackets pertain to information that will be developed as part of the DAC in Tier 1. In cases in which the bracketed information is not available because it is dependent upon as-built or as-procured information, the staff stated that the brackets should be filled-in prior to issuance of the COL based upon available design information, with the recognition that the licensee may need to request a license amendment to change the values once the as-built or as-procured information is available during construction.

By February 15, 2008, STPNOC will submit a letter to the NRC that will: **[Commitment 9]**

- Identify which bracketed information in the generic Technical Specifications is the subject of DAC (such as setpoints, which are the subject of DAC 3.4.13) and which are not the subject of DAC; and
- For bracketed information that is not the subject of DAC, STPNOC will provide a schedule and have further discussion with the NRC.

STPNOC is providing this clarification to the Industry through NEI as a lesson learned for future applicants.

Issue 7

Physical Security: The COL application did not contain all necessary information; for example, a physical security plan, training and qualification plan, and the safeguards contingency plan specific for Units 3 and 4. The Physical Security Plan should address the requirements of 10 CFR Parts 11 and 73.

Response:

In COLA Part 8, STPNOC submitted a Composite Security Plan (Physical Security Plan, Training and Qualification Plan, and the Safeguards Contingency Plan) for the STP site that included the requirements for STP Units 1, 2, 3 & 4. It has always been the intent for the STP site to have a single Protected Area that will encompass all four operating units covered by a single Composite Security Plan.

The Composite Security Plan provided the existing Physical Security Plan for Units 1 and 2 modified to include Units 3 and 4. However, the submitted plan did not include a conceptual site plot plan reflecting all four units.

On November 12, 2007, STPNOC submitted (Reference 7) a conceptual site plot plan reflecting all four units contained within a single Protected Area. As stated in Reference 7, this revised plot plan will be included in Revision 1 to the Composite Security Plan scheduled to be submitted to the NRC in late January 2008. Reference 1 submitted the Fitness for Duty program description, which had been requested during the acceptance review.

Issue 8

Operational Program: The application does not fully describe the Inservice Inspection and Inservice Testing Programs for Pumps and Valves as required by 10 CFR 52.79(a). These operational programs are described in 10 CFR 50.55a(f) and (g). STP may fully describe these programs by addressing the items in RG 1.206, Section C. I. 3.9.6, "Functional Design, Qualification, and Inservice Testing Programs for Pumps, Valves, and Dynamic Restraints."

Response:

The ISI and IST programs are described in FSAR Subsection 3.9.6, "Testing of Pumps and Valves," Subsection 5.2.4, "Preservice and Inservice Inspection and Testing of Reactor Coolant Pressure Boundary," and Section 6.6, "Preservice and Inservice Inspection and Testing of Class 2 and 3 Components and Piping." STPNOC will work with the NRC to resolve any staff questions during the first round of RAIs.

Issue 9

Seismology and Geotechnical Engineering: Without the following information, the staff cannot determine whether or not the application meets the requirements of 10 CFR 52.79(a)(1) and 10 CFR 100.23. STP may provide the necessary information by addressing the elements of RG 1.206, Section C. I. 2.5

- (a) *The COL application presented limited soil dynamic testing data, and did not incorporate this data as part of the soil amplification calculation. The limited data deviates from the generic soil degradation curves for soil modulus reduction and*

damping ratio used in the calculation. The COL application did not follow either RG 1.206 or the limited sampling option, (endorsed with comments through "NRC Staff Draft Interim Staff Guidance on Seismic Issues" dated August 15, 2007).

- (b) No subsurface exploration (borings) was conducted at the proposed site for the Radwaste Building for STP Unit 4 or within the footprint of either of the UHS pump houses, which are all Category 1 structures, and are required to have subsurface exploration completed and submitted in the COL application.*
- (c) The application deviates from SRP 2.5.4.3 in that no boring logs or lab test data related to foundation interfaces were provided.*
- (d) Dewatering plans for the excavation were not provided.*

For Items 9 (e), (f), and (g), STP provided information necessary for the staff to begin the technical review. However, the information submitted indicates that issues exist regarding site suitability and that these issues could become significant open items.

- (e) There is a discrepancy between the shear wave velocity cited in the ABWR Design Certification Document and that cited in the COL application. This was not identified by STP as a Tier 1 departure, and does not meet the ABWR DCD site design parameter requirement for the minimum shear wave velocity of 1000 ft/s.*
- (f) Settlement and differential settlement of Category 1 structures greatly exceed settlement criteria for this class of structure.*
- (g) Bearing Capacity of several Category 1 structures does not appear to meet the minimum required 15 KSF in the ABWR DCD. For example, Unit 3 is 8.9 KSF with clay soil, or 14.3 KSF for sand. This appears to be a Tier 1 departure.*

Response:

- (a) The soil sampling for RCTS testing is complete, and the test report preparation and review are in progress. The results of the RCTS testing will be provided to the NRC as they become available and incorporated into a future revision to the COLA [FSAR COM 2.5S-1] by the end of the third quarter of 2008.**
- (b) As a result of the addition of a Unit 4 Radwaste Building, additional subsurface explorations for the Unit 4 Radwaste Building, the rerouted service water pipe tunnels, and one additional boring within the footprint for each UHS pump house were performed in mid-2007. The test results are currently under review and will be transmitted by February 15, 2008. [Commitment 10] STP will update the FSAR accordingly. (COM 2.5S-2)**
- (c) Boring logs and lab test data review were submitted to the NRC in Reference 8.**

- (d) The dewatering plan will be submitted by November 7, 2008. [Commitment 11]. The construction dewatering plans will be similar to the plans used during the construction of STP Units 1 and 2.
- (e) Refer to the response to Issue 2 for discussions of shear wave velocity.
- (f) STPNOC is aware of the potential for settlement and differential settlement at this site based on lessons learned during the construction of STP 1 & 2. STPNOC will develop a program to manage settlement and differential settlement, and will share the program with the NRC.
- (g) The soil properties from the site soil investigation are provided in FSAR Table 2.5S.4-41A. The ultimate bearing capacity for each Category 1 building foundation was calculated using these site soil properties and is provided in FSAR Table 2.5S.4-41B. The lowest ultimate bearing capacity for a building described in the reference ABWR DCD was calculated for the Unit 3 Reactor Building as 26.8 KSF.

According to DCD Tier 1 Table 5.0 and Tier 2 Table 2.0-1, the minimum allowable static bearing capacity for the soil is 718.20 kPa (15 KSF). This value is based on dead load and live load only, and contains no factor of safety, no seismic or other loading conditions, and no effects from buoyancy. Therefore, the ultimate bearing capacity values contained in FSAR Table 2.5S.4-41B that were derived from the site soil parameters should be compared to 15 KSF (718.2 kPa). For example, the Unit 3 Reactor Building has a minimum ultimate bearing capacity of 26.8 KSF, which is greater than the DCD required minimum of 15 KSF.

Environmental Report (ER): The staff found that some sections of the ER do not provide the detail (or tell the story) to understand the decision-making process that lead to the conclusions in the ER. The following paragraphs detail the sections of the ER in which the required level of detail has not yet been provided.

Issue 10

The discussion of the alternative site selection process is not sufficiently detailed to allow the staff to understand the decision-making process in accordance with Environmental SRP (ESRP) Section 9.3.

Response:

STPNOC has been aware of and closely followed changes to regulatory guidance in NUREG-1555 and in the recent North Anna Atomic Safety Licensing Board decisions. While STPNOC attempted to provide a comprehensive Section 9.3, recent developments have provided additional clarifications in NRC expectations. STPNOC is providing this clarification to the Industry through NEI as a lesson learned for future applicants.

References 9 and 10 provided additional information regarding the alternative sites and a revised ER Section 9.3. The supplements provided expanded descriptions of the process utilized to evaluate alternative sites in accordance with NUREG-1555 and described the factors considered and the criteria used to screen potential sites within a defined Region of Interest. Once identified as appropriate, alternative sites were compared to the proposed site to determine if any were "obviously superior" in terms of environmental impacts. The revised ER Section 9.3 fully describes this process.

Issue 11

STP did not conduct an adequate cultural resources survey in accordance with ESRP Sections 2.5.3, 4.1.3, and 5.1.3. The ER relies heavily on the survey conducted in 1973 for existing Units 1 and 2, and did not provide the necessary information to bring this section current.

Response:

To evaluate the historic/cultural resource setting and potential impacts, STPNOC relied solely on the cultural resources survey conducted in 1973 for STP Units 1 & 2. STPNOC believes this survey meets the requirements of ESRP Sections 2.5.3, 4.1.3, and 5.1.3. STPNOC elected not to conduct additional cultural resource surveys because all planned construction activities associated with STP Units 3 & 4 would be conducted on lands previously surveyed or on lands that were previously disturbed by Units 1 and 2 construction activities.

Consultations with the State Historic Preservation Officer (SHPO) concurred that there would be limited benefit to conducting additional surveys on these previously disturbed lands.

Nevertheless, STPNOC, in accordance with commitments contained in Reference 9, will revise ER sections pertaining to cultural resources to discuss the information evaluated during the SHPO consultation. STPNOC will discuss the use of offsite fill material for roadbed construction and foundations. In addition, STPNOC will develop procedures to mitigate potential impact to cultural or historic resources during construction. This will include developing procedures to stop work and notify the SHPO if artifacts of a historic nature are discovered onsite during construction.

Issue 12

The ER provides information on aquatic species in the Colorado River before 1991. Current aquatic species can only be determined by way of an adequate aquatic monitoring program established in accordance with ESRP Sections 5.3.1.2 and 6.5.2, and RG 4.2, Part B, Section 6. The current program, begun in June of 2007, does not specify Colorado River intake and discharge structures as monitoring points; furthermore, it is unclear how many months of monitoring have been completed.

Response:

In accordance with commitments contained in Reference 10, STPNOC continues to collect confirmatory aquatic ecology monitoring data on the Colorado River in the vicinity of the intake and discharge structures. This monitoring program will continue for a complete calendar year. STPNOC submitted in Reference 11 the six-month interim monitoring report and will provide updates to NRC at nine and twelve months. Updated ecological information will be incorporated into formal COLA revisions as it becomes available. STPNOC believes these programs will confirm the previously submitted information developed before 1991.

References:

1. Letter, M. A. McBurnett to Document Control Desk, "Supplement to Combined License Application," dated November 13, 2007 (ABR-AE-07000011)
2. Letter, G. W. Oprea to NRC Region IV, "First Interim Report Concerning the Design Basis Flood for the South Texas Project," dated September 28, 1983 (ST-HL-AE-1011)
3. Letter, M. A. McBurnett to Document Control Desk, "Main Cooling Reservoir; Completion of Remedial Work," dated March 15, 1988 (ST-HL-AE-2572)
4. Letter, T. H. Cloninger to Document Control Desk, "Main Cooling Reservoir," dated June 20, 1994 (ST-HL-AE-4817)
5. Letter, T. W. Alexion to W. T. Cottle, "South Texas Project, Units 1 and 2 - Safety Evaluation on the Main Cooling Reservoir and Essential Cooling Pond Performance During and After Filling (TAC Nos. M86279 and M86280)," dated September 19, 1994 (ST-AE-HL-93934)
6. NUREG-0781, "Safety Evaluation Report Related to the Operation of South Texas Project, Units 1 and 2," dated April 1986, Appendix J, "Reevaluation of the Completed Main Cooling Reservoir," page 6
7. Letter, M. A. McBurnett to Document Control Desk, "Replacement for Combined License Application Part 8," dated November 12, 2007 (ABR-AE-07000009)
8. Letter, G. T. Gibson to Document Control Desk, "MACTEC Boring Logs for STP Units 3 and 4," dated December 10, 2007 (ABR-AE-07000018)
9. Letter, G. T. Gibson to W. F. Burton, "Environmental Report Acceptance Review: Outstanding Issues," dated November 8, 2007 (ABR-AE-07000010)
10. Letter, M. A. McBurnett to Document Control Desk, "Supplement to Combined License Application," dated November 21, 2007 (ABR-AE-07000013)
11. Letter, G. T. Gibson to Document Control Desk, "Aquatic Ecology Monitoring: Six-Month Interim Report," dated November 29, 2007 (ABR-AE-07000016)

ATTACHMENT 2

Issues Resolved During NRC Acceptance Review

Issue 1

Departure Evaluations: Twelve departures are identified in the COL application as requiring staff approval. These departures were not evaluated against the March, 2007 version of the Standard Review Plan (SRP) as required by 10 CFR 52.79(a)(41).

Response:

STP Nuclear Operating Company (STPNOC) evaluated the eleven Tier 1 and one Tier 2* departures against the March 2007 version of the SRP as required by 10 CFR 52.79(a). It was not clear to STPNOC from the available guidance that the details of the evaluation were required to be incorporated into the COLA. STPNOC is providing this clarification to the Industry through the Nuclear Energy Institute (NEI) as a lesson learned for future applicants.

Table 1.9S.2-2 submitted in Reference 1 confirms that the departures meet the criteria of the March 2007 version of the SRP and the supplemental material satisfies 10 CFR 52.79(a)(41).

Issue 2

Missing Departures: Staff has identified nine departures related to Auxiliary Systems that were not included in the departures report. These departures were under Sections 9.1.2 - Spent-Fuel Storage and 9.1.3 - Fuel Pool Cooling and Cleanup System. A complete report containing a brief description of all plant-specific departures from the DCD, including a summary of the evaluation of each as required by 10 CFR Appendix A, X.B.1 needs to be provided.

Response:

As part of a general update to the reference ABWR Design Control Document (DCD) Tier 2 Section 9.1, the Spent Fuel System was extensively revised and STPNOC elected to include these changes in a single standard departure (STD DEP 9.1-1). This departure brought the Spent Fuel System into alignment with the latest GE Hitachi (GEH) design. Because the departure was unique and included many changes, STPNOC created a "summary departure" for COLA Part 7 that did not repeat in detail a description of each individual change that was annotated in FSAR Section 9.1. It was also not clear to STPNOC from the available guidance that the details of the evaluation were required to be incorporated into the COLA. This clarification is a lesson learned for future COLA applicants and will be shared by STPNOC with the Industry through NEI.

In reviewing this departure, STPNOC discovered that the screening/evaluation for STD DEP 9.1-1 was performed on the "summary departure" instead of the individual changes annotated in FSAR Section 9.1. A GEH corrective action request was initiated to document and evaluate this condition. A full screening/evaluation for the individual changes has been prepared for the changes identified in the replacement for FSAR Section 9.1 provided in Reference 1.

A replacement FSAR Section 9.1, minus the six changes discussed below was submitted to the NRC on November 13, 2007 (Reference 1). A revised COLA Part 7 Section 3, "Departures Report," was also included to address the remaining changes in STD DEP 9.1-1.

Six changes in Section 9.1 involved the spent fuel pool capability for removing decay heat under normal and maximum design basis conditions, including anticipated single failures. To correct the condition discussed above, STPNOC removed these six changes from the COLA and will not take them as a departure. These changes may be reevaluated and perhaps resubmitted at a future date, but they are not necessary to support safe operation of the certified ABWR design.

Reference:

1. Letter, M. A. McBurnett to Document Control Desk, "Supplement to Combined License Application," dated November 13, 2007 (ABR-AE-07000011)

ATTACHMENT 3**Commitments**

The following table identifies new actions committed to by STPNOC in this letter. Any other statements in this letter are provided for information purposes and are not considered to be regulatory commitments.

Number	Commitment	Due Date or Milestone
1	STP Nuclear Operating Company (STPNOC) commits to update the Final Safety Analysis Report (FSAR) to explicitly reference only IEEE-603 and incorporate any additional compliance items from IEEE-603 as they relate to this departure. STP commits to include this material as part of COLA Revision 1.	2/15/08
2	The overall project schedules are still being developed and the schedule for the DAC items cannot be immediately provided. STPNOC commits to provide the requested plans and schedules to the NRC by early 2008.	3/31/08
3	STPNOC will modify the proposed change to the Radwaste Building seismic design to indicate that the change constitutes a Tier 1 departure and will modify the COLA appropriately in Revision 1, including requesting an exemption from Tier 1.	2/15/08
4	FSAR Subsection 3.8.6.2 addresses COL Information Item 3.24 and states "Physical properties of the site-specific subgrade medium and the settlement of foundations are assessed in Section 3H.6." The reference should have been to FSAR Subsection 2.5S.4.10.4, which specifically addresses foundation settlement. This reference will be corrected in COLA Revision 1.	2/15/08
5	The reference cited, "The Current State of Knowledge Regarding Potential Tsunami Sources Affecting U.S. Atlantic and Gulf Coasts," was not available prior to the submittal of the STP Units 3 & 4 COLA. The information in this reference will be reviewed and FSAR Subsection 2.4S.6 will be updated if required.	2/15/08
6	The assumption used in FSAR Subsection 2.4S.12 for the postulated Upper Shallow Aquifer pathway concerning discharge to Kelly Pond will be validated using specific hydrogeologic data by March 31, 2008.	3/31/08

Number	Commitment	Due Date or Milestone
7	The number of observation wells (28) used to develop groundwater level contour maps and to predict pathways will be evaluated and FSAR Subsection 2.4S.12 modified as required. STPNOC will develop a detailed schedule for this activity by February 15, 2008.	2/15/08
8	The plotted contour maps provided in FSAR Subsection 2.4S.12 will be evaluated and updated as required considering construction of the proposed units and that plant structures and footings could penetrate the Lower Shallow Aquifer. This effort will be completed by March 31, 2008.	3/31/08
9	<p>By February 15, 2008, STPNOC will submit a letter to the NRC that will:</p> <ul style="list-style-type: none">▪ Identify which bracketed information in the generic Technical Specifications is the subject of DAC (such as setpoints, which are the subject of DAC 3.4.13) and which are not the subject of DAC; and▪ For bracketed information that is not the subject of DAC, STPNOC will provide a schedule and have further discussion with the NRC.	2/15/08
10	Additional subsurface explorations for the Unit 4 Radwaste Building, the rerouted service water pipe tunnels, and one additional boring within the footprint for each UHS pump house were performed in mid-2007. The test results are currently under review and will be transmitted by February 15, 2008.	2/15/08
11	The dewatering plan will be submitted by November 7, 2008.	11/7/08