April 29, 2009

Mr. Mark McBurnett, Vice President
Regulatory Affairs
South Texas Project Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: REGULATORY AUDIT SUMMARY OF SOUTH TEXAS PROJECT, UNITS 3 AND 4 COMBINED LICENSE APPLICATION REVISION 2 CONTAINMENT AND HYDRODYNAMIC LOAD METHODOLOGY

Dear Mr. McBurnett:

By letter dated September 24, 2008, South Texas Project Nuclear Operating Company (STPNOC) submitted South Texas Project (STP) Units 3 and 4 Combined License Application (COLA), Revision 2. To support the review of STP Units 3 and 4 COLA, the NRC staff participated in an on-site audit of the process for developing the containment and hydrodynamic load methodology information in support of their COLA. The audit occurred at the Westinghouse Offices in Monroeville, Pennsylvania on March 3-4, 2009. The detailed results of the audit are provided in the attached Enclosure.

As described in the enclosed Audit Summary, STP identified the need to change their licensing approach with respect to containment and hydrodynamic load modeling in the next revision of the COLA. The approach presented by STP proposes to submit two separate Topical Reports (TRs) for review and approval by the NRC staff. The first TR will document use of the GOTHIC Methodology using the design parameters identified in NEDO-20533 and the Advanced Boiling Water Reactor (ABWR) Design Control Document (DCD) to calculate containment pressures and temperatures. The second TR will document the use of GOTHIC to calculate pool swell and hydrodynamic loads. This TR will include benchmarking of the GOTHIC model against actual test data. The TR for containment pressure and temperature will be submitted prior to the submittal of COLA Revision 3, but the benchmarking of GOTHIC for pool swell against the actual test data may not be available until December 2009. Open Item 5. e) in the enclosed Audit Summary identifies an action for the staff to review the proposed approach and provide feedback to STP on the impact of the approach on the current STP COLA review schedule.

The NRC staff will review the subject TRs and formulate requests for additional information within the current Phase 2 completion schedule provided STP submits the TRs as described below and in STP Letter U7-C-STP-NRC-090033 of April 20, 2009.

1) STP will submit the first TR on the containment modeling using GOTHIC no later than June 30, 2009.

2) STP will submit the second TR detailing the calculation methodology for pool swell no later than September 30, 2009. A supplemental submittal benchmarking the actual test data against the results of the GOTHIC calculations will be submitted no later than December 30, 2009.

Finally, STP will have the detailed calculations and benchmarking test data information in support of the subject TR available for audit by the NRC to facilitate review and approval of GOTHIC for ABWR containment and hydrodynamic load modeling.

Delay of the above submittals may affect the Phase 2 completion date for review of the COLA. If necessary, please provide revised submittal dates of the subject TRs, and the NRC staff will adjust the COLA review schedule accordingly. Should you have any questions, please contact Stacy Joseph, Project Manager for the STP COLA at (301) 415-2849 or Stacy.Joseph@nrc.gov.

Sincerely,

/RA//

Belkys Sosa, Chief
ESBWR/ABWR Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

Docket Nos. 52-012 and 52-013

cc: See next page

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ACCESSION NO. ML090980270 **NRO-002**

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STP UNITS 3 AND 4 COLA REVISION 2

CONTAINMENT AND HYDRODYNAMIC LOAD METHODOLOGY

AUDIT SUMMARY

1. Background

The staff performed an audit of the South Texas Project (STP) Units 3 and 4 Combined License Application (COLA) and the process for developing the hydrodynamic loads and containment methodology in support of Chapters 3B and 6.2. The purpose of the audit was to identify whether the alternate vendors, Toshiba and Westinghouse, had correctly implemented the methodology from the Advanced Boiling Water Reactor (ABWR) certified Design Control Document (DCD), NEDO-20533, into the model being utilized by STP (GOTHIC). The audit was held at the Westinghouse Offices in Monroeville, Pennsylvania on March 3-4, 2009. The audit team consisted of the NRC staff members and Contractors identified in Table I. The applicant staff that participated in various audit discussions over the course of the two days at Westinghouse is identified in Table II.

Table I: NRC Staff and Contractors	
NAME	**AFFILIATION**
Andrzej Drozd	NRC Audit Team Lead
Michael Snodderly	NRC Technical Branch Chief
Stacy Joseph	NRC Licensing
Mohsen Khatib-Rahbar	Energy Research, Inc (ERI)
Michael Zavisca	ERI
Pravin Sawant	ERI
Fred Moody	Consultant to ERI

Table II: Applicant's Staff			
NAME	**AFFILIATION**	**NAME**	**AFFILIATION**
John Kunicky	Westinghouse	Raymond J. Sero	Westinghouse
Rick OfStun	Westinghouse	Jason Douglass	Westinghouse
Kenji Arai	Toshiba	Fred Hayes	Westinghouse
William McConaghy	Toshiba/TANE	Terry Casteel	Westinghouse
Steve Frantz	Morgan Lewis	Scott Head	STPNOC
Tom George	NAI	Fumihiko Ishibashi	Toshiba/TANE
John Blaisdell	Westinghouse	Koichi Kondo	Toshiba/TANE
Nirmil Jain	Westinghouse	Dee Xenakis	Westinghouse
Aaron Heinrich	Westinghouse	Brad Maurer	Westinghouse
Caroline Schlaseman	Toshiba/TANE	Bob Quinn	Wesinghouse
Hirohide Oikawa	Toshiba	Jim Tomkins	STPNOC

2. Objective

The objective of the audit was for the staff to gain a better understanding of the detailed calculations and methodologies in support of STP's licensing basis for containment and hydrodynamic loads and for the staff to have a clear understanding of STP's plan to obtain approval of their model, if required.

3. Regulatory Basis

This audit supports the NRC staff review of the analytical methods used by STP for calculating drywell pressure and temperature response as specified by Standard Review Plan (SRP) (NUREG-0800) Section 6.2.1.1.C-10, since the analytical method used by STP (GOTHIC) is other than the General Electric (GEH) model approved for ABWR. In addition, the information gathering performed during this audit supports the confirmatory analyses to be performed by the staff as specified by SRP Section 6.2.1.1.C-9.

4. Audit Activities

The audit began on March 3, 2009, with a proprietary presentation by STP, Toshiba and Westinghouse. The presentation contained the STP licensing history for containment and hydrodynamic load methodology. The applicant also provided detailed information on the results and methodology for calculating peak pressure and temperature and the resultant pool swell loads. The applicant identified the differences between the methodology used as the licensing basis for the ABWR DCD (NEDO-20533) and the model being utilized by STP for the COLA (GOTHIC). Based on the differences identified by the applicant, the staff determined that NEDO-20533 was not fully implemented into the model utilized by the applicant. During the presentation, the applicant referenced non-conservative errors in the previous analysis provided in the ABWR DCD for containment peak pressure and temperature. These errors had been previously identified by GEH in NEDO-33372. In order to account for the errors in the DCD analysis, the method used by STP results in a less conservative pressure and temperature response than that which was approved for the Certified ABWR Design. The peak pressure safety margin will be reduced from 15 percent in the DCD to approximately 11 percent (preliminary).

On March 4, 2009, the staff and the applicant discussed Request for Additional Information (RAI) 1868; specifically when the remaining items that had not been supplied would be provided to the NRC staff and the general content of the RAI responses.

The NRC staff then divided into two groups to review the containment and hydrodynamic load calculations performed by STP using the GOTHIC methodology. The first group reviewed the calculations for containment pressure and temperature. During the audit, the staff identified the plant parameters that would need to be provided by the applicant in order for the staff to perform confirmatory calculations. RAI 1868 formally requested a number of these plant parameters, but a number of parameters were not originally identified by the staff. The staff will formally request the remaining input parameters via a supplementary RAI. The second group reviewed the model and calculations for pool swell.

Based on the finding that the method used by STP for calculating containment peak pressure and temperature is less conservative than what was previously approved in the DCD, STP identified the need to change their licensing approach in the next revision of the COLA. The preliminary approach will allow for NRC staff review and approval of the GOTHIC Model. In the final activity of the audit, STP presented a preliminary plan for Revision 3 of the COLA with respect to containment and hydrodynamic load methodology. STP will submit two separate Topical Reports (TRs) for review and approval by the NRC staff. The first TR will document use of the GOTHIC Methodology using the design parameters identified in NEDO-20533 and the ABWR DCD to calculate containment pressures and temperatures. This TR will also correct the errors identified in NEDO-33372. The second TR will document the use of GOTHIC to calculate pool swell and hydrodynamic loads. This TR will include benchmarking of the GOTHIC model

against actual test data. Revision 3 of the STP COLA, due to be submitted to the NRC by September 30, 2009, will include the final values for pressure, temperature, pool swell and the resultant hydrodynamic loads. The TR for containment pressure and temperature will be submitted prior to the submittal of COLA Revision 3, but the benchmarking of GOTHIC for pool swell against the actual test data will not be available until December 2009. This will delay submittal of the second TR until after Revision 3 of the COLA has been submitted. The staff raised the following concerns with the approach presented by STP:

a) The staff sees a potential issue with separating the containment pressure/temperature and the hydrodynamic load analyses into two separate reports.

b) The staff raised concerns with the STP approach for not including the Horizontal Vent Tests (HVT) as part of the licensing basis for vent clearing and pool swell.

c) The estimated submittal date for the Pool Swell/Hydrodynamic Load Topical Report follows the current Phase 2 completion date for the staff. Delay of this submittal may affect the Phase 2 Milestone completion date for review of the COLA.

5. <u>Open Items/Potential RAIs</u>

a) In order for the NRC contractors to complete their model to perform confirmatory calculations of containment pressure and temperature, the staff and their contractors identified a number of plant parameters that STP will need to provide. The staff committed to submit a supplemental RAI requesting the subject plant parameters (complete).

b) STP has committed to respond to the remaining questions in RAI 1868 per the dates identified in STP Letter U7-C-STP-NRC-090010 dated 19 February 2009. The supplemental letter from STP will include an explanation of the new licensing approach or a commitment date to provide the new licensing approach (complete).

c) In order to support the NRC's confirmatory analysis, STP committed to place the GOTHIC input decks for containment pressure and temperature in the Westinghouse Reading Room in Rockville, MD to allow for additional audits by the staff and their contractors.

d) Because the change in licensing approach may have a significant impact on the review schedule, STP stated that they would provide final calculations and results in support of the COLA to the staff (or have them available at the Westinghouse Reading Room) as the data becomes available. STP/Toshiba also committed to having the actual test data (or derivative documents) related to the Pool Swell Test Facility (PSTF) and HVT available for review by the NRC.

e) The staff committed to review the proposed approach and the impact on the current STP COLA review schedule and provide feedback to STP (complete).

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