

June 22, 2010

MEMORANDUM TO: Mark Tonacci, Chief  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

FROM: Stacy Joseph, Project Manager **/RA/**  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

SUBJECT: REGULATORY AUDIT SUMMARY OF SOUTH TEXAS PROJECT  
UNITS 3 AND 4 COMBINED LICENSE APPLICATION – TOXIC GAS  
CONCENTRATION CALCULATIONS

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). To support the review of STP Units 3 and 4 COLA, the Nuclear Regulatory Commission (NRC) staff participated in an on-site audit of the STP and Bechtel supporting documentation for the STP toxic gas concentration calculations. The audit occurred at the Westinghouse Offices in Rockville, Maryland on May 6, 2010. The detailed results of the audit are provided in the attached Enclosure.

CONTACT: Stacy Joseph, NRO/DNRL  
301-415-2849

Docket Nos.: 52-012  
52-013

Enclosure:  
As stated

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**NRO-002**

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**SOUTH TEXAS PROJECT UNITS 3 AND 4 COMBINED LICENSE APPLICATION  
TOXIC GAS CONCENTRATION CALCULATIONS  
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 STP and Bechtel supporting documentation for calculating toxic gas concentrations. To address COL License Information Item 6.8 in the STP Units 3 and 4 COLA, the applicant stated that no hazardous chemicals were identified in Section 2.2S.3 with quantities exceeding the screening criteria of Regulatory Guide (RG) 1.78. As a result, the applicant does not provide instrumentation to detect and alarm a hazardous chemical release in the STP Units 3 and 4 vicinity and to isolate the service building clean area from such releases. In response to Request for Additional Information (RAI) 06.04-1, the applicant submitted the results of the required sensitivity analyses for the toxic gas concentrations for some chemicals inside the control room. The applicant performed their sensitivity calculations using the ALOHA computer code. The staff performed its own confirmatory calculations using the HABIT computer code in accordance with RG 1.78. The staff's results for toxic gas concentrations inside the control room exceeded the immediate danger to life and health (IDLH) values. This result is different from the applicant's results for toxic gas concentrations.

The purpose of the audit was for the staff to review the supporting STP documentation for the toxic gas concentration calculations in order to understand the difference between the two calculation methods and the reason for the discrepant results.

The staff performed this audit at the Westinghouse Offices in Rockville, Maryland on May 6, 2010. The audit team consisted of the Nuclear Regulatory Commission (NRC) staff members identified in Table I. The applicant's staff that participated in the audit discussions at Westinghouse is identified in Table II.

<b>Table I: NRC Staff</b>	
<b><u>NAME</u></b>	<b><u>AFFILIATION</u></b>
Syed Haider	NRC Audit Team Lead
Stacy Joseph	NRC Licensing

<b>Table II: Applicant's Staff</b>			
<b><u>NAME</u></b>	<b><u>AFFILIATION</u></b>	<b><u>NAME</u></b>	<b><u>AFFILIATION</u></b>
Jim Tomkins	STPNOC	Mary Richmond	Bechtel
Scott Head	STPNOC	Harry Moate	Bechtel
Jacob Schulz	STPNOC	Altheia Wyche	Bechtel

## **2. Regulatory Basis**

This regulatory audit is based on the following:

- General Design Criteria 19
- Regulatory Guide 1.78

## **3. Audit Activities**

The audit began with a presentation by Bechtel. Bechtel described how the sensitivity analyses were performed, provided the assumptions used in the analyses and also provided the results using ALOHA and HABIT in order to show the conservatism in their analyses.

Following the presentation, the staff reviewed the Bechtel calculations and assumptions in further detail and compared the calculations to the staff's confirmatory calculations.

At the end of the audit, the staff presented the results of the audit and identified three remaining questions that resulted in RAIs. Bechtel and STPNOC stated that they understood the questions and were prepared to provide a response.

## **4. Audit Results**

The staff identified that additional information is needed in order to finalize the review for control room habitability in the following areas:

- a) Justification for puddle size for the Acetic Acid (offsite storage) calculations
- b) Justification for duration of time used in the ALOHA calculations
- c) Calculations and temperature sensitivity for the Sodium Hypochlorite calculations

The RAI addressing the above issues can be found under ADAMS Assessment number ML101410152.