**AUDIT PLAN TO ACCESS THE BASIS OF SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY'S EVALUATION OF THE DEPARTURES TAKEN FROM CHAPTER 11 OF THE ADVANCED BOILING WATER REA CTOR TIER 2 PER THE REQUIREMENTS IN 10 CFR Part 52, APPENDIX A, SECTION VIII.B.5**

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| **APPLICANT**: | South Texas Project Nuclear Operating Company |
| **APPLICANT CONTACT**: | William Mookhoek, Scot Stephens |
| **TIME**: | July 29, 2009 (8:30 a.m. - 5:00 p.m.) through<br>July 30, 2009 (8:30 a.m. - 5:00 p.m.) |
| **LOCATION**: | South Texas Project Nuclear Operating Company<br>Bay City, Texas |
| **REVIEWERS**: | Timothy Frye (NRO, Audit Lead)<br>Stephen E. Williams (NRO)<br>Douglas Dodson (NRO)<br>Raj Anand (NRO)<br>Robert Kellner (NRO) |

## BACKGROUND

South Texas Project Nuclear Operating Company Generation Company, LLC (South Texas Project) has submitted to the U.S. Nuclear Regulatory Commission (NRC), a Combined License Application (COLA) to construct and operate two additional units (Units 3 & 4) based on the U.S. Advanced Boiling Water Reactor (US-ABWR) Certified Design (DCD) at the South Texas Project Nuclear Power Plant (STPNPP) site located in the county of Matagorda near the City of Bay City, Texas. The NRC staff has initiated review of the STPNPP Units 3 & 4 COLA.

A review of STP FSAR Chapter 11 (Tier 2, Rev. 2) and applicant's response to RAI 11.04-1 (STP Letter ABR-AE-08000046, June 26, 2008) indicates that specific changes are proposed for the radioactive waste management, including the LWMS, GWMS, and SWMS, described in FSAR Sections 11.2, 11.3, and 11.4, respectively. The Departures Report indicates that the departures have been evaluated and determined to comply with the requirements of 10 CFR Part 52, Appendix A, Section VIII.B.5. The staff intends to review the applicant's evaluation process and the basis for the applicant's determination that prior NRC approval is not required to ensure that the process results in changes that are consistent with the requirements of Appendix A, Part 52, Section VIII.B.5.

## PURPOSE AND APPROACH

The purpose of this audit is to review additional documents related to the basis for South Texas Project Nuclear Operating Company's evaluations that concluded that the departures in Chapter 11 of the FSAR have been evaluated and determined to comply with the requirements of 10 CFR Part 52, Appendix A, Section VIII.B.5 and assess the validity of the applicants conclusion that these departures did not require prior NRC approval. The topics covered in the audit are

presented in the NRC staff's Information Needs provided to South Texas Project Nuclear Operating Company.

To achieve the review goals in an efficient manner, the NRC staff assembled an interdisciplinary audit team. To facilitate and expedite the work, it is foreseen that the audit will be attended by representatives from South Texas Project Nuclear Operating Company who will introduce the audit topic and provide supporting documents and technical evidence to the reviewers. The staff will document the audit findings in an audit report.

## AUDIT ACTIVITIES AND SCHEDULE

The NRC staff will conduct the review over a period of two business days. NRC may request an ad-hoc extension of the audit at the same location if findings during the ongoing audit reveal the need for additional time. Such an extension will be requested before the meeting is adjourned on July 30, 2009 by the NRC staff responsible for the audit.

Following the audit, the NRC staff responsible for the audit will assemble and prepare a final audit report. The final report will be made available to all contributors for their concurrence by October 1, 2009. Any final notes by the contributors will be communicated to Timothy Frye no later than October 15, 2009.

A proposed agenda for the audit is presented in Attachment A. An Information Needs is presented in Attachment B. If necessary, any circumstances related to the conductance of the audit will be communicated to Timothy Frye (NRC) at 301-415-3900 or at timothy.frye@nrc.gov.

**Attachment A**

**Proposed Agenda**
**NRC Health Physics Safety Audit**
**July 29-30, 2009**
**South Texas Project Nuclear Power Plant Site**
**Bay City, Texas**

**Wednesday, July 29, 2009 Morning Session: AUDIT - Proprietary**

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|---|---|---|
| **8:30-9:15** | Entrance / Introduction | [NRC/South Texas Project Nuclear Operating Company] |
| **9:15-12:00** | Applicant Presentation of Process, Procedures, Methods, and Documentation Used to Complete Tier 2 Departure Evaluations Per the Requirements of 10 CFR 52, Appendix A, Section VIII.B.5 | [South Texas Project Nuclear Operating Company] |
| **12:00** | Lunch | |

**Wednesday, July 29, 2009 Afternoon Session: AUDIT - Proprietary**

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|---|---|---|
| **1:00 – 3:00** | NRC Audit of Available Documentation | [South Texas Project Nuclear Operating Company] |
| **3:00 – 4:00** | NRC team Meeting | |
| **4:00 – 5:00** | Debrief of applicant | |
| **5:00** | Adjourn | |

**Thursday, July 30, 2009 Morning Session: AUDIT - Proprietary**

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|---|---|---|
| **8:30 - 12:00** | NRC Audit of Available Documentation | [NRC/South Texas Project Nuclear Operating Company] |
| **12:00** | Lunch | |

**Thursday, July 30, 2009 Afternoon Session: AUDIT - Proprietary**

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|---|---|---|
| **1:00 - 3:00** | NRC Audit of Available Documentation | [NRC/South Texas Project Nuclear Operating Company] |
| **3:00 - 4:00** | Team meeting | |
| **4:00 – 5:00** | Exit with applicant | |
| **5:00** | Adjourn / Exit | |

**Attachment B**

**Information Needs**
**South Texas Nuclear Power Plant (STPNPP), Units 3 and 4 COL**
**Health Physics (HP) Safety Site Audit**

**July 29-30, 2009**

| ID No. | Statement of Information Needed |
|---|---|
| **Health Physics (HP)** | |
| **HP-01** | LWMS, GWMS, and SWMS - The response contained in STP Letter ABR-AE-08000046 (June 26, 2008) indicates that the Part 52 Appendix A "screening evaluations were recreated" because previous documents were not available. The applicant is requested to describe the process and procedures that STP developed and used in documenting all DCD departures. In addition to the requested description of the process and procedures, provide copies of the documentation packages generated in screening the design changes of the LWMS, GWMS, and SWMS. |
| **HP-02** | LWMS - The response contained in STP Letter ABR-AE-08000046 (June 26, 2008) indicates that the failure of the Low Conductivity Collector Tank remains the limiting accident and, consequently, the proposed change does not result in an increase in the frequency of the limiting accident previously evaluated in the DCD. However, it is not clear if the evaluation considered the use of a skid mounted LWMS system setup and operated in a truck bay located near a loading dock, which affords greater opportunities for spills and leaks to impact the environment. Accordingly, the applicant is requested to provide documentation showing whether the screening process did consider the failure of components from the skid-mounted LWMS system, and that if it were to fail, the resulting release of liquid waste would comply with the effluent concentration limits and unity-rule of Appendix B (Table 2) to Part 20 and dose limits to members of the public under Parts 20.1301 and 20.1302, and criteria of radwaste tank failure consequence analysis of SRP Section 11.2 and BTP 11-6 (NUREG-0800, March 2007). |
| **HP-03** | GWMS and OGS - A review of the Departures Report indicates that the number of charcoal adsorber vessels and their configuration have been changed when compared to the DCD. The Departures Report also states that there is no impact on the probability or consequence of an accident or system or component malfunction. However, it is not clear if the evaluation considered that changes in the configuration of charcoal vessels and changes in operating temperatures of the charcoal beds negatively affected the holdup |

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| | times of noble gases and removal efficiencies of iodines in charcoal delay beds. Accordingly, the applicant is requested to provide documentation showing that the screening process did consider such system parameters in confirming that gaseous effluent releases will comply with the effluent concentration limits and unity-rule of Appendix B (Table 2) to Part 20 and dose limits to members of the public under Parts 20.1301 and 20.1302. |
| **HP-04** | OGS - A review of the Departures Report indicates that the number of charcoal adsorber vessels and their configuration have been changed when compared to the DCD. The Departures Report also states that there is no impact on the probability or consequence of an accident or system or component malfunction. However, it is not clear if the evaluation considered that changing the configuration of the OGS from an integrated unit to a recombiner train would change the vulnerability of the system to withstand internal effects of $H_2/O_2$ detonations, whether the revised design includes instrumentation and analyzers to preclude the formation of explosive gas mixtures, and assessed the radiological impact of an OGS leak or component failure at the EAB given the new design. Accordingly, the applicant is requested to provide information showing whether the screening process did consider such considerations for the OGS, and that if it were to fail, the resulting release of gaseous waste would comply with the effluent concentration limits and unity-rule of Appendix B (Table 2) to Part 20 and dose limits to members of the public under Parts 20.1301 and 20.1302, and criteria of radwaste tank failure consequence analysis of SRP Section 11.3 and BTP 11-5 (NUREG-0800, March 2007). |
| **HP-05** | Review of the Departures Report indicates significant changes in the radwaste building design, building layout, component shielding, and system configurations of the LWMS, GWMS, and SWMS when compared to the DCD.<br><br>a) Please provide documentation showing that the screening process evaluated the potential for post accident operator access to equipment and systems located in the radwaste building as described in Section II.B.2 of NUREG 0737.<br>b) It is not clear if the screening process evaluation included review of the calculations to ensure the DCD design fission product source term offgas release rate was used in the departure process. Please provide documentation showing that the screening process evaluated the radwaste system source term inventories and shielding using the same fission product release rate as the DCD.<br>c) In addition to the requested description of the process and procedures, provide copies of the radwaste system dose rate, source term, and shielding documentation packages generated in evaluating the design changes of the LWMS, GWMS, and SWMS. |
| **HP-06** | The applicant is requested to describe the results of the screening evaluations conducted for each technical and regulatory aspect identified above and provide supporting documentation in each applicable FSAR Section, i.e., Sections 11.2, 11.3, 11.4, 12.2, and 12.3. The applicant is requested to include in its response supporting information at a level of detail that is adequate for the staff to conduct its own independent evaluation. |

(1) The following is a listing of the models that have input/output files requested in the above Table of Information Needs. Please make available for reference and demonstration the following input/output packages, along with an expert knowledgeable in the specifics of the respective input/output packages. (Note that this list is not intended to exclude any others requested in the Table).

- BWR-GALE, RATAF, GASPAR II, LADTAP II, and XOQDOQ

(2) As requested in the above Table of Information Needs, please make available for reference and demonstration the following references and documents as hard copies during the site audit. (Note that this list is not intended to exclude any others requested in the Table).

The most recent copies of the “South Texas Steam Electric Station Off-Site Dose Calculation Manual Units 1 and 2”, and “South Texas Steam Electric Station Annual Radiological Environmen

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