

Audit Plan for Nuclear Regulatory Commission Staff Audit of
South Texas Projects (STP), Units 3 and 4,
Chapter 19 and Section 17.4S of the STP COL Application

I. PURPOSE

The purposes of this audit are for the Nuclear Regulatory Commission (NRC) staff to:

- Conduct a review of South Texas Projects (STP), Units 3 and 4 (3&4), probabilistic risk assessment (PRA) description and results that are provided at the Westinghouse Twinbrook office located in Rockville, Maryland. This audit will facilitate the staff's review of Chapter 19 ("Response to Severe Accident Policy Statement") of the STP 3&4 Final Safety Analysis Report (FSAR).
- Conduct a review of the records and procedures associated with STP 3&4 design reliability assurance program (D-RAP) that are provided at the Westinghouse Twinbrook office. This audit will facilitate the staff's determination that the list of risk-significant systems, structures, and components (SSCs) within the scope of D-RAP is being developed appropriately and in accordance with the methodology described in Subsection 17.4S.1.4 ("Methods of Analysis for Risk Significant SSC Identification") of FSAR Section 17.4S ("Reliability Assurance Program").

II. BACKGROUND AND AUDIT BASES

The NRC staff conducted an audit of the STP 3&4 PRA during the period of September 22-23, 2009 at the Nuclear Energy Institute (NEI) NPOC office in Rockville, Maryland. From the audit's exit meeting on September 23, 2009 between the staff and STP Nuclear Operating Company ("the applicant"), the applicant agreed to provide a copy of the STP 3&4 PRA description and results at the Westinghouse Twinbrook office for the staff to further review. In order to complete the technical review of Chapter 19 of the STP 3&4 FSAR, the staff is planning an audit to further review the STP 3&4 PRA description and results provided at the Westinghouse Twinbrook office. This audit will facilitate the staff's determination that the Tier 1 and Tier 2 departures for the STP 3&4 design are adequately addressed in the STP 3&4 PRA, which was developed based on the reconstituted ABWR PRA.

In accordance with 10 CFR 52.79(d)(1), the initial list of risk-significant SSCs in Appendix 19K of FSAR Chapter 19 incorporates by reference Appendix 19K of the certified ABWR DCD and updated to account for site-specific design information and design departures. Based on FSAR Section 17.4S and associated FSAR Commitment 17.4-1, as D-RAP enters the detailed design, procurement, fabrication and construction phases, the list of risk-significant SSCs will be updated, revised, and maintained in accordance with the methodology described in FSAR Section 17.4S.1.4. STP is currently updating the list of risk-significant SSCs in accordance with this methodology. This audit will facilitate the staff's determination that the list of risk-significant SSCs is being developed appropriately and in accordance with the methodology described in FSAR Subsection 17.4S.1.4.

III. SCOPE

The scope of this audit includes the review of the following information:

- STP 3&4 PRA description and results, including the Level-1 at-power PRA and the PRA for shutdown operation. This part of the audit will focus on those areas that are considered especially important to the risk assessment of the STP 3&4 design, including:
 - Initiating Events
 - Data Analysis (including human error probabilities)
 - Accident Sequence Analysis
 - Success Criteria
 - Systems Analysis
 - Results and Insights
 - External Events
 - Shutdown PRA

These specific areas of review have been selected based on the STP 3&4 design departures and the topics that have been the subject of Requests for Additional Information (RAI).

- STP 3&4 D-RAP records and procedures that include:
 - STP 3&4 D-RAP coordinating procedure that identifies the organizational responsibilities, interfaces and total set of procedures necessary to collectively implement the D-RAP. The development of this procedure is in compliance with STP 3&4 FSAR Section 17.4S.6 ("Procedure Control") and is further discussed in STP's response to RAI 17.04-8, dated September 28, 2009.
 - STP 3&4 procedure(s) used for determining the risk-significant SSCs in accordance with the methodology described in FSAR Section 17.4S.1.4. The development of this procedure is in compliance with FSAR Section 17.4S.1.2.4 ("Engineering Design Controls for SSC Identification") and FSAR Section 17.4S.6.
 - For selected systems in which the system reviews have been completed, STP 3&4 D-RAP records (e.g., records of expert panel decisions and supporting documents) that document the evaluations for categorizing the risk significance of SSCs in accordance with the methodology described in FSAR Section 17.4S.1.4 (which includes the use of the new PRA risk categorization criteria and an expert panel to augment PRA techniques using the deterministic categorization process). These records should also document the qualifications of the expert panel. Maintaining these records is in compliance with FSAR Section 17.4S.7 ("Records").

IV. AUDIT ACTIVITIES

The audit will be conducted by a team of NRC staff knowledgeable in STP 3&4 FSAR Chapter 19 and Section 17.4S. The team will perform the audit at the Westinghouse Twinbrook office in Rockville, MD. The team will review, as needed, the documentation and records described under Part III of this audit plan, which should be provided at the Westinghouse Twinbrook office. The team members will write RAIs, as deemed appropriate, and assist in preparing, editing and finalizing the audit report.

V. SCHEDULE AND DELIVERABLES

The audit of the documentation and records described under Part III of this audit plan is scheduled to take place during the period of November 4, 2009 to **July 29, 2011** at the Westinghouse office located at 12300 Twinbrook Parkway, Suite 150, Rockville, MD. The staff should contact and make arrangements with the Westinghouse Twinbrook office at least 24 hours prior to each visit to review the documentation and records. Over the duration of this audit, the staff will communicate with the applicant, as necessary, any preliminary findings and potential issues. A written audit report will be completed 90 days following completion of the audit.

VI. PROPOSED TEAM

The proposed team is made up of the following individuals:

- Todd Hilsmeier NRC (Lead, Level-1 PRA, External Events, D-RAP)
- John Lai NRC (Level-1 PRA, External Events)
- Don Dube NRC (Senior Level Advisor)
- Edward Fuller NRC (Level-2 PRA, Severe Accidents)
- Keith Tetter NRC (Level-1 PRA)
- Marie Pohida NRC (Shutdown PRA)
- Michelle Gonzalez NRC (Level-1 PRA results)

VII. REQUIRED REFERENCE MATERIAL (FROM APPLICANT)

The following documentation should be available at the Westinghouse Twinbrook office to the audit team.

- STP 3&4 PRA description and results, including internal events, low-power shutdown, and external events.
- STP 3&4 D-RAP coordinating procedure that identifies the organizational responsibilities, interfaces and total set of procedures necessary to collectively implement the D-RAP.

- STP 3&4 procedure(s) used for determining the risk-significant SSCs in accordance with the methodology described in FSAR Section 17.4S.1.4.
- For selected systems in which the system reviews have been completed, STP 3&4 D-RAP records (e.g., records of expert panel decisions and supporting documents) that document the evaluations for categorizing the risk significance of SSCs in accordance with the methodology described in FSAR Section 17.4S.1.4. These records should also document the qualifications of the expert panel.