

August 16, 2007

Mark McBurnett  
Vice President Oversight and  
Regulatory Affairs, Units 3 & 4  
South Texas Project Electric Generating Station  
PO Box 289  
Wadsworth, TX 77483

SUBJECT: THE U.S. NUCLEAR REGULATORY COMMISSION AUDIT REPORT FOR  
SOUTH TEXAS PROJECT COMBINED LICENSE APPLICATION REVIEW

Dear Mr. McBurnett:

On May 21 through 24, 2007, U.S. Nuclear Regulatory Commission (NRC) staff conducted an audit of the South Texas Project (STP) combined license application (COLA) development program at the GE Nuclear Energy (GE) facility in San Jose, California. The enclosed audit report presents the details of that activity.

The NRC auditors reviewed the implementation of selected portions of STP and its contractors' quality assurance programs related to the STP COLA development program, and reviewed quality activities performed to support the STP COLA development. During this audit, the NRC audit team identified several issues associated with the implementation of STP COLA development program that should be addressed prior to completion of the application. These issues are described in the attached audit report as audit response requests (ARR), and you are requested to respond to these ARRs before or as part of your COLA submittal. At the time of the audit, approximately 30 percent of the COLA was completed and the majority of those sections incorporated the design control document (DCD) by reference. As a result, the audit team was unable to review fully the implementation of certain aspects of the COLA development process related to site-specific design activities and potential departures from the DCD under evaluation by the applicant. This limited our ability to meet the objective of supporting the NRC's COLA acceptance review.

M. Burnett

-2-

In accordance with 10 CFR 2.390, "Public inspections, exemptions, requests for withholding," of 10 CFR Part 2, "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter, and its enclosures will be made available electronically for public inspection in the NRC Public Document Room (PDR) or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

Sincerely,

**/RA/**

George W. Wunder, Senior Project Manager  
ESBWR/ABWR Projects Branch 2  
Division of New Reactor Licensing  
Office of New Reactors

Docket No. PROJ0749

Enclosure:  
As stated

M. Burnett

-2-

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**U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NEW REACTORS**

Audit Report No: PROJ0749-2007-001

Organization: South Texas Project Nuclear Operating Company

Applicant Contact: Mark McBurnett  
Vice President Oversight and Regulatory Affairs Unit 3 & 4  
South Texas Project Electric Generating Station  
PO Box 289  
Wadsworth, Texas 77483

Nuclear Industry: GE Nuclear Energy (GE) is contracted to supply the combined license application (COLA) to South Texas Project (STP) Units 3 and 4, for submittal to the NRC for review and approval. GE is engaged in the supply of advanced boiling water reactor (ABWR) designs to utilities. GE also furnishes engineering services, nuclear replacement parts, and dedication services for commercial grade electrical and mechanical equipment.

Audit Dates: May 21 through 24, 2007

Auditors: Greg S. Galletti, Lead Inspector, CQVP/DCIP/NRO  
Richard P. McIntyre, Inspector, CQVB/DCIP/NRO  
Kerri A. Kavanagh, Inspector, CQVP/DCIP/NRO  
Milton Concepcion-Robles, Inspector, CQVP/DCIP/NRO  
Michael Morgan, Inspector, CQVB/DCIP/NRO  
Shani Lewis, Inspector, RII  
George Wunder, Project Manager, DNRL/NRO

Approved by: John Nakoski, Chief  
Quality and Vendor Branch 2  
Division of Construction Inspection & Operational Program  
Office of New Reactors

## 1.0 AUDIT SUMMARY

The purpose of this audit was to determine if quality activities were adequately established, documented, and implemented to support the development of the combined license application (COLA) for South Texas Project (STP), Units 3 and 4.

The audit was conducted at the General Electric Nuclear Energy (GE) facility in San Jose, California. The audit bases were:

- Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR) Appendix B,
- Part 21, "Reporting of Defects and Noncompliance," to Part 50 of Title 10 of the *Code of Federal Regulations* (Part 21) and,
- Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."
- 10 CFR 50.9, "Completeness and accuracy of information."

During this audit, the NRC audit team identified several issues associated with the implementation of STP COLA development program that should be addressed prior to completion of the application. These issues are described in this report as audit response requests (ARR). At the time of the audit, approximately 30 percent of the COLA was completed and the majority of those sections incorporated the design control document (DCD) by reference. Additionally, the staff was unable to fully review implementation of certain aspects of the COLA development process related to site-specific design activities and potential departures from the DCD under evaluation by the applicant. As a result, the lack of completeness of the majority of COLA sections, at the time of the NRC staff audit, limited our ability to fully meet the objective of supporting the COLA acceptance review.

### 1.1 AUDIT RESPONSE REQUESTS

- ARR-001 was identified and are discussed in Section 3.3 of this report.
- ARR-002 was identified and is discussed in Section 3.5 of this report.
- ARR-003 was identified and is discussed in Section 3.9 of this report.
- ARR-004 was identified and are discussed in Section 3.13 of this report.

## 2.0 STATUS OF PREVIOUS AUDITS

There were no previous NRC audits in support of the STP COLA development.

### **3.0 AUDIT OBSERVATIONS AND OTHER COMMENTS**

#### **3.1 QUALITY ASSURANCE PROGRAMS**

##### **a. Audit Scope**

The NRC audit team reviewed the quality assurance (QA) program requirements and the implementation process for STP COLA activities. Specifically, the NRC audit team reviewed the draft completed portions of the COLA, that have been reviewed and accepted by the STP, the South Texas Project Nuclear Operating Company (STPNOC) "Operations Quality Assurance Plan (OQAP)," the General Electric Nuclear Energy (GENE) QA program for STP Units 3 and 4, the Bechtel quality assurance plan for STP Units 3 and 4, and the quality assurance program manuals for Tetra Tech and MACTEC. These documents govern the implementation of quality activities performed for STP COLA design activities, by STP and its contractors.

##### **b. Observations**

The NRC audit team reviewed the STP, GE, and subcontractor policies governing quality assurance programs to assure those policies provided an adequate description of the implementation requirements consistent with the requirements of Criterion II, "Quality Assurance Program," of Appendix B.

##### **b.1 Quality Assurance Program Descriptions**

##### **(I) STP**

Revision 17 of the STP OQAP reflects changes to the organization for the operating units (1 & 2) and identifies the initial organization and alignment for activities related to the proposed additional units (3 & 4). The STP OQAP provides the basis for the control and performance of safety-related and quality-related activities associated with Early Site Permitting/COLA activities for additional units (3 & 4) at STP. Controls, as currently stated in the OQAP, were extended to specific activities associated with the new units by inserting an applicability statement in the Purpose and Scope of station procedures. These specific QA Program controls for the new units remain in effect until the NRC approves a quality program specific to the new units, and the associated implementing procedures are in place.

The NRC audit team reviewed the STP OQAP and verified that the scope of the QA program was consistent with the quality-related activities being performed. The NRC audit team confirmed that the STP OQAP provided an organizational description, interrelationships, and areas of responsibility and authority for all organizations performing quality-related activities in support of the COLA. The STP OQAP describes the independence between the organization performing checking functions from the organization performing the functions. Additionally, the applicant retains responsibility for the total quality program, with the STP quality organization personnel performing oversight activities of subcontracted activities.

(ii) GE Quality Assurance Program for South Texas Project Units 3 and 4

GE NEDC-33283, "For South Texas Project (STP) - Units 3 and 4 Quality Assurance Program," describes the QA program that was being used for the control of the design, procurement, and manufacture of equipment and components for the STP plants. All managers within GE and STP with quality-related responsibilities have full authority to implement this QA program within their respective areas of responsibility. This program was based on the standard GE QA Program Description, NEDO-11209-04A, 1983 that applies to all GE activities performed affecting the quality of items and services supplied to nuclear power plants and establishes GE's compliance with the provisions of Appendix B. The most recent revision of NEDO-11209-04A was approved by the NRC staff in March 1989. NEDO-11209-04A commits GE to the requirements of ANSI/ASME NQA-1-1983 and the NQA-1a-1983 addenda as endorsed by the NRC in Regulatory Guide 1.28, Revision 3 (August 1985).

The NRC audit team reviewed NEDC-33283 and verified that the scope of the QA program was consistent with the quality-related activities being performed. The NRC audit team confirmed that NEDC-33283 provided documentation of activities in written policies, procedures, or instructions in a manner that, if appropriately implemented, assures compliance with the requirements of applicable codes, industrial standards, and regulations. During the review of NEDC-33283, the NRC audit team noted that NEDC-33283 stated that NQA-1-1994 would be applied for construction activities only. The NRC audit team questioned both the GE quality assurance manager and the STP quality organization personnel as to how NQA-1-1994 was going to be applied since GE is currently committed to NQA-1-1983 and NQA-1a-1983. GE and STP determined that the reference to NQA-1-1994 did not belong in NEDC-33283. The statement was removed from Sections 1 and 2, and the References of NEDC-33283, and the revision of NEDC-33283 was approved, prior to the completion of the audit.

(iii) Bechtel Quality Assurance Program Plan

GE contracted with Bechtel as the lead contractor for site characterization activities that will be described in Chapter 2 of the COLA. In addition, Bechtel is responsible for Chapters 1 through 10 of the environmental report.

The Bechtel Quality Assurance Program Plan (QAPP) describes the interface between the Bechtel Nuclear Quality Assurance Manual (NQAM) and GE specific requirements and commitments that are applicable to STP Units 3 and 4. The QAPP is based on the NQAM, and in specific cases such as QA program requirements, organization, design control and verification, and QA records, the QAPP simply refers to the NQAM. The QA program policies contained in the NQAM were designed to meet the requirements of Appendix B. The NQAM was developed for the full scope of Bechtel's services, while the QAPP specifically identified QA policies applicable to Bechtel's scope of work on the STP COLA project. The QAPP specified the QA policies and requirements applicable to the project, consistent with Bechtel's scope of work. Bechtel implemented modifications to the QA policies as appropriate to reflect unique project or GE requirements.

The NRC audit team reviewed the Bechtel QAPP and verified that the scope of the QA program was consistent with the quality-related activities being performed. The NRC audit team

confirmed that the Bechtel QAPP and NQAM provided an organizational description, interrelationships, and areas of responsibility and authority for all organizations performing quality-related activities in support of the COLA.

(iv) Tetra Tech NUS Quality Assurance Program

Tetra Tech NUS, INC. (TtNUS) was subcontracted by Bechtel to assist in STP site characterization activities. The TtNUS QA program was developed to assure the overall quality and effectiveness of operations including administrative functions as well as project management and technical services provided by TtNUS. The NRC audit team reviewed the TtNUS QA program and verified that the scope of the QA program was consistent with the quality-related activities being performed.

(v) MACTEC Engineering and Consulting Quality Assurance Program

MACTEC was subcontracted by Bechtel to provide drilling, data collection, and laboratory testing associated with site characterization activities. The MACTEC QA program applied to the execution and delivery of technical and professional services provided by MACTEC. The general format of the MACTEC Quality Assurance Manual (QAM) followed the criteria for QA outlined in Appendix B and ASME NQA-1-1994. MACTEC included project-specific requirements through the Quality Assurance Project Document (QAPD). The QAPD was used to incorporate project-specific quality requirements consistent with the Bechtel contract.

The NRC audit team confirmed that the MACTEC QA program provided an organizational description, interrelationships, and areas of responsibility and authority for all organizations performing quality-related activities in support of the COLA.

(vi) Risk Engineering, Inc. Quality Assurance Program

Bechtel subcontracted to Risk Engineering, Inc. (REI) to obtain computational and expert consulting services in performing probabilistic seismic hazard and sensitivity analyses for the STP site. The audit team reviewed the REI QA manual and Software Quality Assurance Plan (SQAP). These quality documents covered all activities related to REI's services that were important to safety as specified in the Bechtel service requisition. REI is a small company with no stand-alone QA organization. However, REI had established QA guidance using its "Quality Assurance Manual," Revision 8, which described organizational responsibilities and procedure controls. The audit team noted that REI appropriately delineated the functional personnel titles necessary to define the QA program, authority, and responsibility for QA controls.

(vii) William Lettis & Associates, Inc.

Services for seismic and geotechnical evaluation of the site were provided by William Lettis and Associates (WLA) under a subcontract with Bechtel. Because WLA did not possess a QA program that met the requirements of Appendix B, WLA performed work in accordance with Bechtel's QA program. The audit team reviewed selected project instructions prepared by WLA and reviewed by Bechtel to provide guidelines for conducting seismic and geotechnical activities. The audit team verified that the project instructions required that work be performed under the Bechtel QA program.

c. Conclusions

The NRC audit team concluded that the QA program requirements were appropriately translated into implementing procedures as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.2 DESIGN CONTROL PROCESS

a. Audit Scope

The NRC audit team reviewed the implementation of the GE design control process for the STP COLA. Specifically, the NRC audit team reviewed the policies and procedures governing the implementation of the GE design control process, the ABWR Engineering Guide that describes the design bases changes from the ABWR certified design, and selected Tier 2 sections that were complete and approved by the applicant's Licensing Review Board (LRB).

b. Observations

The NRC audit team reviewed the GE policies and procedures governing the design process to assure those guidelines provided an adequate description of the process and implementation consistent with the requirements of Criterion III, "Design Control," of Appendix B.

b.1 Design Control and Verification Process

NEDO-11209-04A states, in part, that design control processes are documented in practices and procedures that establish the responsibilities and interfaces of each organizational unit that has an assigned design responsibility.

NEDC-33283, states, in part, that the QA program for South Texas Project, Units 3 and 4, along with NEDO-11209-04A, complies with Basic Requirement 3 and Supplement 3S-1 of ASME NQA-1-1983 and the QA requirements of the STP contract.

GSP-03.5, "STP Units 3 & 4 COLA/FSAR Creation," defines the process for preparing the final version of the STP Units 3 and 4 COLA/FSAR for STP's submittal to the NRC. GSP-03.5 states, in part, that the starting point for the STP COLA/FSAR will be the ABWR DCD, Revision 4. GSP-03.5 requires that the Lungmen and first of a kind engineering (FOAKE) engineering change authorizations (ECAs) be reviewed for changes applicable to the ABWR DCD. Taiwan is currently constructing two ABWRs (1350 MWe each), Lungmen Units 1 and 2. The Lungmen design was based on the ABWR DCD with plant specific changes and improvements. The Lungmen design documents that translate the high-level certified design information into lower-tier construction, design and procurement documents provide the FOAKE for the ABWR in Taiwan. GSP-03.5 requires that the Lungmen design and FOAKE ECAs be reviewed for changes applicable to the ABWR DCD. Any Tier 1, Tier 2\*, or significant Tier 2 departures from the ABWR DCD are processed in accordance with GSP 03.7, "STP Units 3 and 4 Project Design Review Board Charter and Process."

GSP-03.7, states, in part, that the purpose of the STP Project Design Review Board (PDRB) is to review recommendations for 1) design departures from the ABWR DCD, 2) design features to adapt the ABWR to STP site specific design conditions, and 3) shared common equipment for a dual unit site, for potential incorporation into the STP design.

The NRC audit team reviewed the GE design control process, and the implementing procedures and policy guidelines governing the GE design process applied to the STP Units 3 and 4 project. The NRC audit team verified that the guidance was consistent with the requirements for design control described in Criterion III of Appendix B. The NRC audit team verified that both GSP-03.5 and 03.7 were being used in the development of draft COLA/FSAR sections and that the PDRB had approved the proposed changes for Tier 1, Tier 2\*, and significant Tier 2 changes, as required. Once a draft COLA/FSAR section was completed, internal and external reviews were performed prior to review by the LRB. The NRC audit team reviewed LRB meeting minutes for the previous 6 months and reviewed selected packages associated with the draft COLA/FSAR sections that were approved by the LRB. These packages included 1) Section 6.5, "Fission Products Removal and Control Systems," 2) Section 6E, "Additional Bypass Leakage Considerations," and 3) Section 15.5, "Increase in Reactor Coolant Inventory." For each section, the NRC audit team verified that the associated package included the verification cover sheet, verification comments and resolution, if required, COLA text, STP FSAR, and ABWR section.

## b.2 ABWR Engineering Guide (AEG)

AEG-001, "US ABWR Standard and STP 3 and 4 Top Level Design Bases," defines the design bases changes from the ABWR certified design and the Lungmen ABWR for the application to the future US ABWR standard design and STP Units 3 and 4 project as the first of a kind ABWR in the United States (US). AEG-001 was generated and a review of its contents is required by GSP-03.5 and 03.7. AEG-001 provides the top-level design requirements to be used as an engineering guide in the development of US ABWR -STP design documents based on the existing Lungmen design.

The NRC audit team reviewed the design changes listed in AEG-001 and evaluated the proposed changes for impact on the STP COLA development. AEG-001 lists 49 design changes. Since the Lungmen documentation is used as an input for the design bases for the STP project, not all of the 49 changes represent significant differences between the STP COLA and the DCD. Some of these 49 changes reflected differences between the Lungmen design and the DCD. Specifically, the NRC audit team identified that 27 of the 49 changes listed in AEG-001 were differences between the Lungmen design and the ABWR DCD. The applicant indicated that the STP design would be consistent with the ABWR DCD. In these cases, the Lungmen design documentation would be updated to reflect the ABWR DCD and the STP design. In addition, 20 changes have been approved by the PDRB for either STP-specific changes from the ABWR DCD or proposed changes GE will request to the ABWR DCD. STP plant-specific changes will be justified in the COLA. GE will submit topical reports to support the remaining ABWR DCD changes. The remaining 2 changes, did not require approval from the PDRB, but were not consistent with the ABWR DCD. These changes will be justified in the COLA.

c. Conclusions

The NRC audit team concluded that the design control process requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. However, the NRC audit team was unable to review all aspects of the design control process related to site-specific design activities and potential departures from the DCD currently under evaluation by the applicant during the time of the audit. For the aspects of the design control process completed at the time of the audit, the NRC audit team did not identify any issues requiring additional action by the applicant prior to completion of the COLA.

3.3 PROCUREMENT DOCUMENT CONTROL

a. Audit Scope

The NRC audit team reviewed the QA program commitments and the implementation of the controls for procurement of items and services by STP, its primary contractor GE and its contractors and sub-contractors for ABWR COLA activities. Specifically, the NRC audit team reviewed purchase orders, work scope technical requirements, contract services requirements, project plans, supplier QA programs, and methods used by the purchasing organizations to qualify suppliers of safety-related items and services.

b. Observations

b.1 Policies and Procedures for Procurement Document Control

The NRC audit team reviewed Chapter 7.010, "Procurement," Revision 9, dated February 1, 2006, of the STP OQAP. The purpose of Chapter 7.010 is to establish the requirements for procurement of items and services for the STP Electric Generating Station. Chapter 7.010 applies to the procurement of items and services for use at STP that are subject to the controls of STP's quality program. These activities include procurement document control, bid evaluation, vendor evaluation, verification of vendor activities and receiving inspection.

The NRC audit team also reviewed GE's document NEDC-33282, STP-QAR-1, "For South Texas Project (STP) - Unit 3 and 4 Quality Assurance (QA) Requirements for Procurement of Engineering Services and Equipment," Revision 3, dated May 2007. The STP-QAR-1 defines the relationships, responsibilities, requirements for the supplier's quality program, and for documenting results of the quality activities conducted under this program related to the verification of the quality of work and/or engineering services. The STP-QAR-1 does not supercede any contract/purchase order requirements established with STP.

When reviewing the above document, the NRC audit team identified two inconsistencies with GE STP-QAR-1 requirements. In Section 2.12, under ASME QA program, GE was identifying editions of ASME NQA-1 that were not consistent with the GE ABWR DCD and the NEDO-11209-04A QA program description that both reference NQA-1-1983. Also, in Section 2.1.4, under "Reporting of Significant Defects and Deficiencies that could cause a Substantial Safety Hazard," GE included a note that suppliers within the United States shall comply with the provisions of Part 21 in its entirety, including posting requirements. The NRC

audit team concluded this note was confusing in relation to suppliers responsibility for Part 21 when they are located outside of the United States. For both of these instances, GE committed to remove the inaccurate information from the STP-QAR-1. Prior to the audit exit meeting, GE prepared a revised version of NEDC-33282 (Revision 4 dated May 24, 2007), that addressed the identified Part 21 inconsistency.

## b.2 STP Procurement Activities with GE and other ABWR COLA Contractors

STP has contractual agreements in place with GE for the ABWR COLA development. The NRC audit team reviewed the contract established with GE and determined that the appropriate level of technical and quality requirements had been invoked through the purchase order to be consistent with the requirements of Chapter 7.010 of the STP OQAP. This included the applicable regulatory, code, and design requirements, including material and component identification requirements, drawings, specifications, standards, inspection and test requirements, special process instructions and handling, preservation, cleaning, storage, packaging, and shipping requirements.

The team verified that the QA requirements of Appendix B, and the reporting requirements of Part 21 were included in the contract/purchase order requirements from STP to GE.

The NRC audit team reviewed or attempted to review other contracts/purchase orders with suppliers/contractors referenced in the draft STP COLA. Section 1.4, "Identification of Agents and Contractors," of Revision 0 of the draft STP COLA states: "the design of STP 3 & 4 is the responsibility of a group that includes General Electric Nuclear, Bechtel, and Hitachi. The division of responsibility among these companies is as follows: GE is responsible for design of the Nuclear Island, Hitachi is responsible for the design of the Turbine Island heat cycle, and Bechtel is responsible for design of the Balance of Plant, Turbine Building, Yard plus Nuclear Island Auxiliary Systems, Electrical and Radwaste. [The construction of STP 3 & 4 is the responsibility of Hitachi and Bechtel. The division of responsibility among these companies is as follows: Hitachi is responsible for incorporation of modularization into the construction plans and Bechtel is responsible for on-site construction.]"

According to the COLA Preparation Open Items list (POIL), the bracket text still needs to be confirmed. The action item states "confirm that the fourth paragraph in Section 1.4 still accurately reflects the decision on constructor."

Additionally, COLA Section 1.4.5.5, "Sargent & Lundy (S&L)," includes a discussion of the role of S&L, however, S&L does not seem to have a role in the COLA development or implementation. Specifically, Section 1.4.5.5 states "Sargent & Lundy LLC provides Owner's Engineer services for STPNOC. In this capacity, Sargent & Lundy will provide additional technical expertise and organizational depth to STPNOC for the development and implementation of STP 3 & 4." Section 13.1.1.1.3, "Technical Support for Operations," states that "STPNOC has contracted with Tokyo Electric Power (TEPCO) to provide expertise in the operation of ABWRs."

The NRC audit team noted that this is not consistent with the current procurement documents of record for these suppliers. During discussions with STP, it stated that they did not have final contracts (with scope of supply) with these suppliers and committed to revise the COLA as appropriate to include only those suppliers that had contractual arrangements in place with STP for the performance of specific safety-related design and supply activities.

It was still unclear to the NRC audit team as to the extent of the activities that Hitachi was performing for STP and the COLA preparation. Therefore, as a result of this audit, the applicant is requested to provide a description of the actions taken to address the apparent inconsistency identified in the COLA with respect to sub-supplier activities. This is identified as audit response request (ARR-001).

STP selected GE as its principal contractor to assist with preparing the COLA. GE subcontracted with Bechtel to develop several chapters of the COLA that included site characterization activities. Bechtel supplied personnel, systems, project management, and resources to work on an integrated team with GE and STP. Additionally, contractual relationships were established with several specialized consultants to assist in developing the COLA, as described below.

(I) William Lettis and Associates, Inc.

The NRC audit team reviewed the Bechtel Subcontract No. 25293-401-HC4-CY06-00001, "Technical Services Subcontract." The requisition outlined Bechtel's request for technical services from WLA for the performance of geologic mapping and characterized seismic sources. Per the service requisition, WLA was responsible for (1) collecting data associated with the regional and site geologic, tectonic, and seismic conditions, (2) field reconnaissance, (3) map preparation, and (4) evaluation of existing seismic source characterization models. Because WLA did not possess a QA program that complied with the requirements of Appendix B, WLA was required to perform the work in accordance with Bechtel's QA program, as described by the Bechtel QAPP, and the implementing procedures for the QAPP contained in Bechtel's Project Engineering Procedures Manual (PEPM).

(ii) Risk Engineering, Inc.

The NRC audit team reviewed the Bechtel Subcontract No. 25293-401-HC4-HPYK-00001, "Technical Services Subcontract." The requisition outlined Bechtel's request for technical services from REI for the performance of probabilistic seismic hazard assessments and related sensitivity analyses. REI was required to (1) provide seismic hazard calculations using original input source models, source parameters, and original ground motion relationships as needed to develop EPRI 1989 SSE ground motion values; (2) develop a list of the significant seismic sources from the EPRI 1989 seismic source model; (3) perform sensitivity analyses based on the earthquake catalog for the most critical sources; (4) develop updated site-specific rock hazard curves; (5) compute seismic hazard curves for free-field ground-surface conditions; and (6) compute the SSE spectrum for the free-field ground surface. The NRC audit team reviewed Exhibit D, "Probabilistic Seismic Hazard Assessment and/or Sensitivity Analysis," of Bechtel's contract with REI. The work plan described the scope of work, objectives, and activities to be performed by REI. In addition, the work plan stated that REI was required to perform the work in accordance with its QA program and SQAP. Bechtel specified that Part 21 be applied to the REI purchase order. REI maintained and implemented a QAM and the SQAP, and they were both submitted to Bechtel for approval.

(iii) MACTEC Engineering and Consulting, Inc.

Bechtel subcontracted with MACTEC to obtain geological testing support. The NRC audit team reviewed the scope and specifications for MACTEC activities that were documented in Bechtel Technical Services Contract No. 25293-401-HC4-HPYK-0001. Per the contract, MACTEC was required to prepare a QA plan that met Appendix B requirements and also complied with Part 21 requirements. Consistent with the requirements of the Bechtel Technical Specification, MACTEC developed a project specific work plan to identify the scope of work activities and quality requirements, in addition to the MACTEC QAPD. The NRC audit team noted that MACTEC was responsible for providing geotechnical engineers and geologists to continuously oversee and log the investigation work, providing standard penetration tests, collecting, labeling, transporting, and storing soil samples, and subsequent geological testing and lab testing activities. The NRC audit team noted that the procurement document provisions included applicable regulatory requirements, technical requirements, and QA program requirements, consistent with Appendix B requirements.

The NRC audit team reviewed the MACTEC QAPD and the project work plan to assess the adequacy of the specified QA measures, particularly those associated with procurement control, and determined that MACTEC identified a reasonable scope of procurement document control measures to assure the integrity and reliability of site geological test data.

(iv) ABSG Consulting, Inc.

Service Order Subcontract No. 25293-501-HC4-HMDV-00001 specified the technical, administrative, and quality requirements imposed on ABSG Consulting, Inc. by Bechtel. ABSG provided meteorological monitoring data collection analysis and evaluation to describe the dispersion characteristics of the STP site. The NRC audit team noted that the contract specified the scope of work, technical requirements, the supplier's documented QA manual, and requirements for reporting and approving disposition of nonconformances, consistent with Appendix B requirements. Additionally, the NRC audit team reviewed the ABSG's QA program and noted that meteorological monitoring activities were required to meet QA controls specified in the QA manual and associated procedures.

(v) P2 Energy Solutions

Technical Services Contract No. 25293-501-HC4-CY07-00001 described the technical, administrative, and quality requirements imposed on P2 Energy Solutions by Bechtel. P2 Energy Solutions provided aerial survey, topographic mapping, and ground control survey work in accordance with Bechtel specification 25293-501-3PS-CY07-00001, "Technical Specification for Aerial Survey, Topographic Mapping, and Ground Control Survey for the STP Units 3 and 4 Project." This work was classified as non-safety-related. Although this work was considered non-safety-related, the NRC audit team noted that quality requirements were specified by Bechtel in the technical specification, and included the use of industry standards and practices.

c. Conclusions

The NRC audit team concluded that, with the exceptions noted above, the procurement document control process requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team identified one issue in this area requiring additional action by the applicant prior to completion of the COLA (ARR-001).

3.4 DOCUMENT CONTROL

a. Audit Scope

The NRC audit team reviewed the implementation of the STP, Bechtel, and GE processes of document control for the STP COLA program. Specifically, the NRC audit team reviewed policies and procedures governing their document control processes to verify the overall extent and effectiveness of their programs.

b. Observations

b.1 Policies and Procedures for Document Control

The NRC audit team verified that the quality-related documents were developed, reviewed, approved, issued, used, and revised under an established program. The NRC audit team reviewed the following supporting documents and held document control related discussions with members of STP's, Bechtel's, and GE's staffs:

- STP Document Control Program - Operational Quality Assurance Program (OQAP); Chapter 8; Revision 6 (February 1, 1998)
- GE Document Control Program - NEDO-11209-04A; Section 6 (1983)
- Bechtel Document Control Program - NQAM; Sections Q-6.1 and 6.2, Revision 4

The NRC audit team also verified that the scope of each of the above programs were clearly defined and thorough as they pertained to various aspects of document control. The NRC audit team further verified that any changes that were to be made to controlled documents were both appropriately reviewed and approved by the same organization that had reviewed and approved the original documents.

b.2 Implementation of Document Control Programs

The NRC audit team asked for and received samples of controlling documents that were used by STP, GE, and Bechtel to confirm that the use of any outdated and/or inappropriate documents was controlled and mitigated. The NRC audit team noted that all organizations extensively use "computerized" document control programs that are in turn controlled by a very limited number of QA managers. These managers are the only authorized individuals who can make revision or changes to any of the documents. After any of the changes, these then "read

only” documents - that are only obtained through the organization’s computer systems - are tightly controlled and not subject to any unauthorized changes. Use of “hard-copy” material, in all of the organizations mentioned, is procedurally held to a minimum. Those hard-copies that are produced from the system are obtained strictly through records organizations that retain full control over each hard-copy document issued.

The NRC audit team verified that all controlled material was properly identified and that distribution of such material was appropriately specified. The NRC audit team asked for and received the following control program documents to confirm proper identification and distribution of the organization’s controlled materials:

- STP Document Control Program Document - Transfer, Receipt, Distribution and Processing of Controlled Documents; 0PGP07-ZA-0002; Revision 9 (October 14, 2003)
- Bechtel (South Texas Project) Document Control Program Document - 25293-000-G24-GAK-00001-000

Again, The NRC audit team identified that all of the organizations mentioned extensive use of computerized document control programs and that these systems are in turn used to maintain proper identification, adequacy and completeness of all controlled documents. The use of these computerized systems to maintain proper identification, adequacy and completeness of controlled documents was verified by audit team member observation of these systems. The NRC audit team also identified that all workers within these organizations are encouraged to provide feedback of any problems with their systems via the use of their corrective action programs.

c. Conclusions

The NRC audit team concluded that the document control process requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant’s and/or its sub-supplier’s procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.5 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

a. Audit Scope

The NRC audit team reviewed the implementation of the STP and GE process of controlling purchased material, equipment and services for the STP COLA program. Specifically, the NRC audit team reviewed the policies and procedures governing the process to verify the quality of suppliers providing engineering services for STP COLA design activities.

b. Observations

The NRC audit team reviewed the STP, GE, and subcontractor policies governing control of design engineering services and activities for the STP COL, including audits performed by STP of GE and GE of its subcontractors. These documents govern the implementation of quality activities performed for STP COLA design activities, by STP, GE, and its contractors.

b.1 GE Policies and Procedures for Control of Purchased Material, Equipment and Services

GE P&P 70-11, "Quality Policy and Quality System Requirements," Section 8.19, requires that a comprehensive system of planned and documented audits be carried out to verify product quality and compliance with the QA program. It further states that QA audit requirements are provided in GE P&P 70-14, "Nuclear Energy Quality Assurance Audit Requirements." GE P&P 70-14, documents the process required to identify, develop, and implement the Nuclear Energy (NE) QA audits for both internal and external audits. Section 4.1.4 describes that responsible NE components shall conduct QA audits of suppliers, service providers, joint venture/subsidiary companies, business partners, and others with whom they have a business quality/interface to ensure conformance to applicable NE quality system requirements passed on to these entities or otherwise required in these interfaces. These entities are referred to as "suppliers" and audits are called "supplier audits." Included in GE P&P 70-14 is a detailed description of the audit objectives, scheduling, planning, preparation, identification of audit personnel and qualification of those personnel, performance of activities associated with the audits, audit report requirements, and responses to audit results and audit records.

NEDO-11209-04A states, in part, that GE suppliers are subject to audit/evaluation by line-QA personnel for evaluation of the sufficiency of the supplier's QA program and for adequacy of implementation. Each supplier of safety-related equipment or services is audited initially to determine acceptability of their QA program. It further states that QA representatives responsible for supplier audit and surveillance are typically assigned responsibilities such as participation in pre-production reviews with supplier personnel to assure mutual understanding of quality requirements.

GE EOP 45-1.00, "Procurement Initiation and Control," specifies the requirements for procurement of direct material, equipment and services, including the application of technical, engineering, customer, and quality requirements on the purchase orders (POs) and requirements for establishing and maintaining the Approved Suppliers List (ASL).

b.2 Review of GE Supplier Audit Activities

The NRC audit team reviewed the above program, implementing procedures, and policy guidelines governing the GE control of purchased engineering services for the STP COLA program. The NRC audit team verified that the guidance was consistent with the requirements for Control of Purchased Material, Equipment and Services as described in Appendix B, Criterion VII. The NRC audit team verified that the GE process adequately specified the requirements for procurement of material, equipment and services, including the appropriate application of STP invoked technical, engineering, and quality requirements on the POs, and for supplier audits for ASL status.

GE has contracted with five suppliers for design engineering services/activities for the STP COLA program. These suppliers include: Bechtel Power Corporation; Shimizu Corporation; Washington Group International; Erin Engineering & Research, Inc; and Maracor. Currently, Bechtel, Shimizu, and Washington Group International are classified as safety-related suppliers and are included as such on the latest GE ASL. Erin Engineering & Research, Inc and Maracor are classified as non-safety-related and their personnel work under the GE QA program for STP COLA activities.

As part of the implementation review for these five suppliers, the NRC audit team reviewed quality records such as the PO and contractual requirements, Approved Suppliers List information, Audit Plans, Audit Reports, audit checklists, supplier responses to audit findings, and GE Corrective Action Request forms related to audit findings.

The NRC audit team verified that GE had performed an appropriate level of supplier oversight for these suppliers. The NRC audit team did make a general observation that the audit reports should be more consistent as to identifying the appropriate work scope for each supplier (such as specific to ABWR or ESBWR design work) and include adequate objective evidence to support the review of that audit scope. The audit team concluded that this issue could affect the completeness and accuracy of the COLA in that the objective evidence in the audit report did not support the conclusion that the subcontractors were effectively implementing their scope of work. Therefore, the applicant is requested to provide a description of the actions taken to clearly identify the scope of work for each supplier and actions taken to ensure clear identification of and description of the objective evidence identified during the course of these supplier audits. This is identified as ARR-002. The team also noted that the most recent audit conducted at Shimizu, provided adequate objective evidence to support the audit scope.

c. Conclusions

The NRC audit team concluded that, with the exception noted above, the control of material, equipment, and services process requirements, including the oversight of suppliers, have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did identify an issue requiring additional action by the applicant prior to completion of the COLA (ARR-002).

### 3.6 TEST CONTROL

a. Audit Scope

The NRC audit team reviewed the implementation of QA measures related to test control associated with site characterization. Specifically, the NRC audit team reviewed procedures that described the controls implemented by contractors and suppliers to ensure that testing related to COLA activities, such as site boring evaluations, were adequately identified and controlled.

b. Observations

b.1 Policies and Procedures for Test Control

(I) Bechtel Power Corporation

Bechtel's QAPP established the testing requirements applicable to the STP COLA activities. Bechtel stated in the QAPP that, for test control, quality-related activities associated with the preparation of the COLA were performed in accordance with Bechtel's nuclear QA manual with no additional modifications.

The NRC audit team reviewed the Bechtel QA manual and procedures describing the requirements and responsibilities for the control of tests. The NRC audit team reviewed Section 11 of the Bechtel's nuclear QA manual. Section 11.1, "Testing Requirements," described the control of tests within Bechtel's scope. Additionally, Bechtel's Technical Specification 25293-401-3PS-CY00-00001, "Engineering Specification for Subsurface Investigation and Laboratory Testing for South Texas Project Units 3 and 4," Revision 2, described the controls for test activities in support of the COLA. These documents provided the interface responsibilities between Bechtel and the client, applicable test requirements and prerequisites, standards and acceptance criteria, including the use of calibrated instruments and suitable test equipment, documentation and evaluation of test results, and handling of test deviations. These controls are consistent with Appendix B requirements.

(ii) William Lettis and Associates, Inc.

Bechtel contracted with WLA to perform various aspects of the work associated with the development of the COLA. WLA performed geologic field reconnaissance activities to develop maps of the site region, developed geologic cross sections for the STP site, review and evaluation of existing EPRI seismic source characterization models, and prepared relevant portions of the COLA based on the studies performed. Because WLA did not possess a QA program that meets the requirements of Appendix B, WLA performed work in accordance with Bechtel's QA program. As described above, Bechtel's NQAM specified test controls in Section 11. Additionally, all work performed by WLA was required to follow procedures developed and approved by Bechtel.

(iii) Risk Engineering, Inc.

REI's QA manual, and the SQAP described the overall process for conducting safety-related calculations and established software testing requirements that were applied to the STP COLA. Appendix A to the SQAP described the testing controls implemented by REI to ensure that a particular software used complied to the software design requirements and that it returned the results in a correct and accurate manner. The NRC audit team noted that the documents used by REI to perform testing on software included a verification and validation (V&V) plan that described the tasks used to verify and validate the software and a V&V results report that documented the results of the software V&V activities. The NRC audit team reviewed a VVP utilized for data analysis in support of the COLA. The NRC audit team noted that the VVP included provisions for test requirements and prerequisites, test acceptance criteria, documentation and evaluation of test results, and handling of test deviations, as required by the SQAP.

(iv) MACTEC Engineering and Consulting, Inc.

Section 11 of the MACTEC's QAM described the measures for controlling tests performed on materials or equipment and verifying test conformance to specified requirements. The NRC audit team noted that measures were provided to ensure that: 1) tests are conducted in accordance with written procedures or instructions; 2) procedures are reviewed and approved by responsible personnel; and 3) test results are documented and reviewed for accuracy and completeness.

MACTEC's QAPD described the measures to control the tests of soil samples for use in preparation of information that was included in the COLA. MACTEC stated that the tests were performed using acceptable industry standard methods such as American Society for Testing and Materials (ASTM). The NRC audit team noted that controls were in place to 1) ensure that testing criteria and requirements were followed; 2) evaluate exceptions to these criteria and requirements; and 3) notify the client for consultation and permission before tests were conducted.

(v) ABSG Consulting, Inc.

ABSG Consulting, Inc. described its controls for testing in Section 5 of the NQAM. The NRC audit team reviewed ABSC's NQA procedure for software verification and control, No. RCD-NQP-00-P03, Revision 2. The procedure establishes the requirements for V&V, and control of software on in-house computer systems in accordance with the requirements of the NQAM. The NRC audit team noted that the implementation procedure requires all software programs utilized in QA tasks be verified prior to installation. This procedure requirement is implemented for all software programs developed in-house or commercially by third-party developers.

b.2 Review of Test Control Activities

The NRC audit team also reviewed the NRC site visit report dated, January 12, 2007, regarding the STP subsurface investigation activities conducted by the applicant from December 4 through 6, 2006. The NRC review was performed by Region IV and documented QA observations of MACTEC site boring activities, including field work documents (i.e. field boring logs, work procedures), QA-related documentation, and actual boring operations. The NRC site visit report documented that the MACTEC activities were controlled by adequate procedures and standards with an appropriate level of supervisory and QA oversight.

c. Conclusions

The NRC audit team concluded that the test control process requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.7 CONTROL OF MEASURING AND TEST EQUIPMENT

#### a. Audit Scope

The NRC audit team reviewed the implementation of QA measures associated with the control of measuring and test equipment (M&TE). Specifically, the NRC audit team reviewed procedures that described the controls implemented by contractors and suppliers to ensure that M&TE utilized in site characterization activities were adequately controlled.

#### b. Observations

##### b.1 Policies and Procedures for Measuring and test Equipment

The NRC audit team reviewed the Bechtel NQAM and procedures describing the requirements and responsibilities for the control of M&TE. The NRC audit team noted that Section 12.1, "Control of Measuring and Test Equipment," adequately defined the responsibilities for the maintenance, control, calibration, documentation, and identification of M&TE used in activities affecting quality. Controls require the use of calibrated tools, gages, instruments, and other M&TE used for laboratory or field testing activities.

The NRC audit team reviewed the Bechtel's QAPP and noted that it established M&TE requirements applicable to the STP COLA project. Bechtel stated in the QAPP that the control of M&TE activities associated with the preparation of the COLA was performed in accordance with Bechtel's NQAM with no additional modifications. The NRC audit team noted that the controls in place for the control of M&TE were consistent with Appendix B requirements.

##### b.2 Implementation of Sub-Supplier Programs for M&TE

The scope of MACTEC's required services included maintaining calibration documentation of field and laboratory equipment. The NRC audit team noted that MACTEC's QAPD, Section 2, Item 12, "M&TE," invoked additional measures for the control of measuring and test equipment. Specifically, these measures include provisions for evaluating the measurement and test results obtained from equipment that is found to be out of calibration. MACTEC stated that it will calibrate, adjust and maintain its M&TE in accordance with the MACTEC Calibration Manual. Additionally, any results determined to be invalid due to calibration errors were required to have a nonconformance written and processed as specified in the applicable portions of the MACTEC QAPD. The NRC audit team noted that M&TE equipment utilized was required to be listed on the test data sheet and meet the criteria as specified in the chosen test method. The NRC audit team reviewed a sample of test data sheets and noted that the equipment utilized and calibration activity were identified on the test record.

#### c. Conclusions

The NRC audit team concluded that the M&TE requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.8 HANDLING, STORAGE, AND SHIPPING

#### a. Audit Scope

The NRC audit team reviewed implementation of the STP, Bechtel, and GE processes of handling, storage, and shipping for the STP COLA program. Specifically, the NRC audit team reviewed policies and procedures governing these processes to verify the overall extent and effectiveness of their programs.

#### b. Observations

##### b.1 Policies and Procedures for Handling, Storage, and Shipping

###### (i) Bechtel Power Corporation

The NRC audit team reviewed Section Q-13.1 of Bechtel's NQAM, "Handling, Storage, Shipping, and Housekeeping Requirements." It described the responsibilities for housekeeping, and for control and protection of materials, components, and equipment during handling, storage, and shipping. Also, the NRC audit team reviewed Bechtel's QAPP and noted that quality-related activities associated with handling, storage, and shipping were required to be performed in accordance with Bechtel's NQAM, with no additional modifications. The NRC audit team noted that these controls were consistent with Appendix B requirements.

Bechtel's Technical Specification 25293-401-3PS-CY00-00001, "Engineering Specification for Subsurface Investigation and Laboratory Testing for South Texas Project Units 3 and 4," Revision 2, described the controls for the handling, shipping, and storage of soil samples. These controls applied to Bechtel subcontractors performing site characterization work in support of the COLA.

###### (ii) MACTEC Engineering and Consulting, Inc.

The NRC audit team reviewed MACTEC's QAM, Revision 1, Section 13, "Handling, Storage, and Shipping of Items and Samples." It established requirements for assuring that methods are used in the handling, storage, preservation, packaging, and shipping of items or samples in accordance with NQA-1-1994. The NRC audit team also reviewed the controls for the handling, storage and shipping of items contained in MACTEC's QAPD. It stated that samples are to be identified, traceable to the origin and location, maintained in chain of custody, and stored in a locked facility with controlled access. The NRC audit team noted that MACTEC utilized ASTM-D- 4220, "Standard Practices for Preserving and Transporting Soil Samples," to control and preserve, transport, and handle the samples.

##### b.2 Implementation of Sub-Supplier Programs for Handling, Storage, and Shipping

The NRC audit team verified that instructions for; (1) marking and labeling packaging; (2) shipping and handling packaging; and (3) storage of packaged items, were developed and used, within an established program. The NRC audit team reviewed the following supporting documents and held "handling, storage, and shipping" related discussions with STP, and Bechtel. Bechtel represented MACTEC. Documents reviewed included:

- MACTEC Engineering and Consulting Document - QA Manual, Section QS-8, Identification and Control of Items and Samples, Revision 1 (June 17, 2005)
- MACTEC Engineering and Consulting Document - MACTEC STP Geotechnical Work Plan, STP003, Attachment 8 (November 1, 2006)
- Bechtel Engineering Document - Bechtel Engineering Specifications for Sampling 25293-401-3PS-CY00-00001, Revision 0 (December 19, 2006)

The NRC audit team also verified that special protective measures existed for the handling of special materials and that instructions for the cleaning, handling, storage, and preservation of such materials existed. The NRC audit team specifically reviewed MACTEC documentation associated with the handling of soil samples and soil borings taken from the proposed STP construction sites. The NRC audit team noted that the MACTEC instructions were very direct and specific to the STP project and that such instructions were adequate to properly handle such material. The NRC audit team also noted that the associated generic handling, storage, and shipping instructions, provided by Bechtel, contained sufficient information to cover the handling of many other special materials or items. The NRC audit team further verified that the methods currently employed by Bechtel and MACTEC, for the handling of such material, should ensure; 1) cleanliness of the materials; 2) minimize the introduction of foreign material into the materials or items, and 3) maintain appropriate environmental controls over such material/items.

Specifically, the NRC audit team concluded that the three organizations, assigned with the responsibility of proper and appropriate handling, storage, and shipping of materials for the STP project - STP, Bechtel, and MACTEC - have adequate handling, storage, and shipping programs in place. The NRC audit team further concluded that the methods currently employed by STP, Bechtel, and MACTEC should ensure appropriate cleanliness of materials, minimize the introduction of any foreign material into the such materials and they should also maintain appropriate environmental controls.

As detailed in Section 3.9 of this audit report (corrective action section), the NRC audit team reviewed a finding and corrective action of one finding associated with the handling of one jar sample that was found not stored in the appropriate sample container as required by the work plan. The NRC audit team determined that, based on the prompt identification and corrective action implemented by MACTEC, this finding had minimal impact to the development of the COLA.

c. Conclusions

The NRC audit team concluded that handling, storage, and shipping requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.9 CORRECTIVE ACTIONS

#### a. Audit Scope

The NRC audit team reviewed the implementation of the GE corrective action process associated with the STP COLA development program. Specifically, the NRC audit team reviewed the policies and procedures governing the implementation of the GE corrective action program, and reviewed the current status of corrective actions associated with the STP COLA development program. These corrective actions are primarily the result of internal and external assessments on the STP COLA program performed by STP and GE.

#### b. Observations

##### b.1 Policies and Procedures for Corrective Actions

###### (I) STP

The STP-OQAP, described the corrective action program requirements applied to the STP COLA development program. Chapter 13.0, "Control of Conditions Adverse to Quality," establishes requirements and responsibilities for the identification, documentation, evaluation, resolution, control, and reporting of conditions adverse to quality. Chapter 13.0, Section 2.1, further described these requirements and specifies actions taken to assure timely corrective action, as well as, the review and evaluation of conditions adverse to quality for potential reporting to the NRC.

###### (ii) GE

GE NEDC-33283, describes the corrective action requirements applied to the STP COLA development program for GE. Section 16.0, "Corrective Action," references NEDO-11209-04A, Revision 8 that complies with basic requirement 16 of NQA-1-1983.

NEDO-11209-04A, Section 16, requires procedures and practices to be established and documented that provide assurance that conditions adverse to quality or nonconformance are promptly identified, documented and corrected or otherwise handled in accordance with established procedures.

GE P&P 70-11, Section 8.15, describes the general requirements for implementation of a corrective action process including: (1) identification of the potential deficiency; (2) determination of the cause; (3) documented recommended actions to correct deficiency; (4) documented recommended actions to preclude recurrence; (5) and ensuring proper levels of management are made aware of the deficiency to achieve resolution.

GE EOP 75-3.00, "Self-Assessment, Corrective Action, and Audits," specifies the responsibilities for actions to promptly identify, record, and correct conditions adverse to quality and to assure that these conditions do not affect the quality of a product or service. The procedure describes in detail the process for generation of a corrective actions report (CAR), including a discussion of determining appropriate priority levels for potential deficiencies.

## b.2. Corrective Actions Associated with the STP COLA Development Process

The NRC audit team reviewed the current CARs associated with the STP COLA development program to determine if the applicant had identified any programmatic issues that if unaddressed could potentially affect the quality of the COLA, and to ensure that the CARs were dispositioned consistent with the requirements of the applicant's corrective action program. The NRC audit team reviewed approximately 25 current CARs generated as a result of internal and external audits conducted on the STP COLA development program, including: (1) the GE Nuclear QA internal surveillance of the GE program for the development of the STP COLA (STP-07-01), dated April 13, 2007; (2) the STP audit of the GE program for the development of the STP COLA, Audit No. 07-020 (VA), dated April 19, 2007; and (3) the GE audit of its contractor, Bechtel, supporting the development of the STP COLA, (GE Surveillance Report 2006-1), dated November 29, 2006.

A sample of the CARs reviewed by the NRC audit team included:

- CARs 42726, and 42727 identified project procedure/instruction deficiencies and implementation issues. Specifically, process instructions did not provide explicit instructions regarding project requirements or were not implemented as described. (e.g., basis documents, used to guide the design review process were not consistently being used as input by the COLA developers).
- CAR 42725 identified training deficiencies. Engineers were developing COLA sections using different processes, referencing different source documents, and not consistently referencing required design documents. Training and procedures requirements have been identified but had not been formally implemented at the time of the NRC audit.
- CAR 42641 in which STP raised concerns with Bechtel's preparation of portions of the COLA Part 3, Environmental Report. The CAR required Bechtel to identify the cause and corrective actions and to implement preventive actions to preclude recurrence. Bechtel did an extent of condition review and identified additional section of the report that were corrected as a result.
- CAR 42729 identified deficiencies in the process for communicating and tracking which Lungmen ECA's (Engineering Change Authorizations) apply to the STP design. This process is necessary for development of the STP COLA descriptions. The actions identified to resolve this issue were apparently completed but not documented in the CAR tracking system.
- CAR 42892 identifies that the Shimizu ESBWR QA manual being used to perform work associated with the STP COLA program has not been reviewed and approved by GE for that purpose. The CAR response does not identify actions taken to resolve the issue although an audit of Shimizu was subsequently performed by GE to review the Shimizu program.
- CAR 42953 identifies that the STP OQAP Section 3.0 references the Project Design Manual (PDM) as containing the overall design requirements for the STP Contract. However, the PDM does not currently exist and is in preparation. The CAR actions

section does not provide any further information on when the PDM will be completed, verified, and ready for use.

While the internal and external audits and surveillance have been useful in identifying issues and CARs have been written to address these issues, few CAR actions were formally completed and documented at the time of the NRC audit. Many of these CARs were in areas of lack of or ambiguous procedural guidance for COLA development, inconsistent training of personnel involved in the program, procedural non-compliance, design control issues, and weaknesses in audit processes. Since many of the CARs are not scheduled for completion until late June/July 2007 in accordance with the requirements of the corrective action program guidance, final implementation of actions to address these deficiencies has not been completed.

The applicant provided the NRC audit team with a discussion on several interim corrective actions that had been taken to address the apparent programmatic deficiencies identified above. These interim measures included: (1) verbal training of responsible engineers involved in the preparation of the COLA on the step-by-step procedural steps in GSP-03.5, including the expected use of basis documents; (2) addition of an action for the control board to identify any mistakes with implementation of the COLA section development process; (3) ensuring the responsible engineers are reviewing the major DCD departures described in AEG-001 during the application of the design process review; and (4) review and verification that previous COLA development was not affected by these programmatic deficiencies.

While the applicant had apparently taken interim corrective actions that may be effective in correcting the deficiencies identified in the COLA development process, the NRC audit team did not find any record of these actions within the GE corrective action system. Additionally, the NRC audit team noted that many of the proposed corrective actions identified on the individual CARs were not scheduled to be completed for several weeks, although COLA development was continuing during this time. The audit team concluded that these programmatic issue could potentially affect the completeness and accuracy of the STP COLA. Therefore, the applicant is requested to provide: (1) a description of the interim and final corrective actions taken or described in the CARs as necessary to address the programmatic deficiencies self-identified during the audits and surveillance of the program, and (2) a discussion of the basis for determining that the COLA development was conducted in a manner to meet the requirements of 10 CFR 50.9 for completeness and accuracy. This is identified as audit response request (ARR-003).

### b.3 Corrective Actions Associated with Audits and Surveillances of Contractors

#### (I) MACTEC Internal Surveillance (Surveillance Report No.: ST-1)

The NRC audit team reviewed the results of a MACTEC internal surveillance conducted on October 17, 2006. This was the first surveying activity where boring locations had been staked. MACTEC and its subcontractor Miller Drilling performed work in accordance with Bechtel Specification 25293-401-3PS-CY00-00001. As a result of this surveillance, two findings were documented. The NRC audit team reviewed the two findings to determine the potential impact of MACTEC's work on the COLA. The first finding was for failure to verify a global positioning system (GPS) unit gauge accuracy as required in the GPS survey work instruction. MACTEC's surveillance report noted that the GPS unit was not verified for accuracy due to inclement weather or poor satellite coverage. The second finding was for failure to perform initial staking

by a qualified land surveyor in accordance with Bechtel specification. The NRC audit team reviewed MACTEC's corrective action response to the internal audit findings. Corrective action included re-validation of staked points where the GPS unit was not verified for accuracy, qualification of MACTEC personnel for initial staking of subsurface investigation locations, and re-training on requirements to follow technical specifications. The NRC audit team noted that all corrective actions associated with the findings had been closed as denoted on the associated nonconformance and corrective action report (NCAR). In addition, both NCAR's were submitted and approved by Bechtel. The NRC audit team did not identify any issues with the internal audit report and associated NCARs.

(ii) Bechtel's Surveillance of Subsurface Investigation Activities (Quality Surveillance Report No.: 25293-QSSS-06-001)

The surveillance of subsurface investigation activities associated with seismic boring work was conducted on November 7, 2006. These activities were performed by MACTEC and its subcontractor GEO Vision. The scope of the surveillance was limited to the requirements of NQA-1-1994, Subpart 2.20, Section 3, "Field Activities Verification." The surveillance verified that M&TE, drilling, coring, and excavating equipment complied with ASTM standards; was in general compliance with program plan and procedures; qualification of personnel; and identification, handling, and storage of samples and materials. The surveillance identified deficiencies in the following areas: identification and control of project documents (NCAR No. TX013-06); classifying, logging, and reporting methods and activities (NCAR No. TX012-06); and identification, handling, and storage of samples and materials (NCAR's No. TX011-06). These deficiencies were clearly described and included appropriate corrective action to resolve the identified conditions. The NRC audit team reviewed MACTEC's corrective action response to the surveillance findings and noted that MACTEC did not take timely remedial action regarding the control of project records (NCAR No. TX013-06). The issue and its resolution is further described below (see NRC audit team assessment of Quality Surveillance Report No.: 25293-QSSS-06-002).

The NRC audit team reviewed the findings and disposition of NCAR's No. TX011-06 and TX012-06 as described below.

NCAR No. TX011-06 documented an issue with one jar sample that was not stored in a cardboard box as required by the work plan. As documented in the NCAR, corrective action included re-locating the jar sample in the appropriate sample container, and training on handling and labeling of jar samples. NCAR No. TX012-06 documented a discrepancy in a boring log filed in the site office. One boring location (No. B-349) was completed but the activity was not dated and signed as being reviewed. Corrective action included a revision to the work instruction to describe in detail the review of field records, and training of personnel in this matter. The NRC audit team determined that the findings identified above did not have a significant impact on COLA activities and were adequately resolved.

(iii) Bechtel's Surveillance of Subsurface Investigation Activities (Quality Surveillance Report No.: 25293-QSSS-06-002)

The surveillance of subsurface investigation activities associated with seismic boring work was conducted on November 14, 2006. These activities were performed by MACTEC and its subcontractors Miller Drilling Co. and Best Drilling Service. The scope of the surveillance was

limited to the requirements of NQA-1-1994, Subpart 2.20. This surveillance served as a follow-up for the items found unsatisfactory during a surveillance performed on November 7, 2006. In this instance, the NRC audit team noted that one observation was documented regarding the control of project documents. In the surveillance report Bechtel documented that MACTEC did not implement appropriate remedial actions (identified in the November 7, 2006, surveillance) for some MACTEC project records (e.g., training records, supplier deviation disposition requests, boring logs) as required by NCAR No. TX013-06 documented on November 10, 2007. Part of MACTEC's corrective action was to use dual storage or purchase a fireproof cabinet for the storage of project documents in the on-site office in order to maintain them as usable records in case of an unwanted event. The audit team confirmed, by reviewing the surveillance report and NCAR documentation, that MACTEC did not take corrective action in a timely fashion. As noted in the NCAR, corrective action was scheduled to be completed by November 17, 2006, and Bechtel auditors found during the surveillance that some project records were not adequately controlled and stored. To complete corrective action of this issue, MACTEC placed a fireproof cabinet in the off-site office on November 15, 2006, documented a work instruction that described the process for storing project documents, and performed dual storage for other project records. The NRC audit team determined that the findings identified above did not have a significant impact on COLA activities and were adequately resolved.

c. Conclusions

The NRC audit team concluded that, with the exception noted above, the requirements for corrective actions have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did identify an issue requiring additional action by the applicant prior to completion of the COLA (ARR-003).

### 3.10 QUALITY ASSURANCE RECORDS

a. Audit Scope

The NRC audit team reviewed QA program record controls to verify that the QA program provides for the preparation of sufficient records to furnish documentary evidence of activities affecting quality and that the program includes provisions for an acceptable media on which electronic records are created and stored. Specifically, the NRC audit team verified that the QA program provides for the administration, identification, receipt, storage, preservation, safekeeping, retrieval, and disposition of all records and that procedures and policies were developed to adequately implement the requirements for record retention.

b. Observations

b.1 Policies and Procedures for Quality Assurance Records

The applicant's operations QA plan describes the requirements and the responsibilities for the collection, storage, retrieval, and maintenance of records applicable to those records acquired and developed as a result of, or in support of, STP.

GE's engineering operating procedure, EOP 75-6.00, "Quality Assurance Records," Revision 7, defined the system for creation, identification, control, transmittal, retrieval, and retention of records. This procedure applies to records that have been supplied to or generated by GE.

Bechtel's nuclear QA manual, NQAM Revision 4, outlines the different policies regarding control and maintenance of QA records, turnover of such QA records to clients, retention and turnover of records by suppliers or subcontractors, and control, maintenance, and storage of records at the plant site. Bechtel procedure 2KP-K01G-00021, "Records Retention Plan," Revision 4 establishes the processes for the development and execution of a records retention plan and for ensuring the quality of electronic records in the document management system.

c. Conclusions

The NRC audit team concluded that the record control requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

### 3.11 AUDITS

a. Audit Scope

The NRC audit team reviewed the implementation of the applicants internal audit processes for the STP COLA development program. Specifically, the NRC audit team reviewed the policies and procedures governing the implementation of the applicants audit program, and reviewed the internal surveillance report conducted by GE, on its STP COLA development program.

b. Observations

b.1 Policies and Procedures for Audits

(I) STP

The STP QQAP, Chapter 15.0, "Quality Oversight Activities," establishes requirements for a system of independent oversight activities of QA programs for STP. Section 2.1 provides for implementing a program of independent oversight activities that includes audits, assessments, evaluations, performance monitoring, and surveillances to ensure the requirements of the QQAP are being properly implemented. Section 5.2 provides a detailed description of the audit process (internal and external) for assuring implementation of quality activities consistent with the QA program.

The STP QQAP also provides requirements for the qualification of audit team members, frequency of audits (biennial) with justification for other periods, and a description of surveillance and assessment evaluations provided.

(ii) GE

GE NEDC-33283, provides a description of the audit activities associated with the STP COLA. Section 18.0, "Audits," references NEDO-11209-04A, that complies with the basic requirement 18 and Supplement 18S-1 of NQA-1-1983, NQA-1a-1983, and Regulatory Guide (RG)1.28. The QAP states that GE will perform annual QA audits on internal organizations performing STP activities. Additional audits may be performed on suppliers based on risk, performance history, complexity, program changes or management discretion.

b.2 Internal Self Assessments

The NRC audit team reviewed an internal GE surveillance report completed by GE of STP COLA development and licensing activities (STP-07-01, April 13, 2007). The surveillance report provided a detailed description of a performance-based review conducted by the GE surveillance team, and identified several programmatic deficiencies with the current COLA development process. The NRC audit team concluded that the GE surveillance was a detailed and critical evaluation of the program that identified significant programmatic issues related to the STP COLA development. The NRC audit team also found that GE had taken adequate steps to document these issues in accordance with its corrective action program, as noted in Section 3.9 of this report.

c. Conclusions

The NRC audit team concluded that the audit process requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team concluded that the GE internal surveillance was a well-detailed, critical evaluation of the project. The NRC audit team did not identify any issues in this area requiring additional action by the applicant prior to completion of the COLA.

## 3.12 TRAINING AND QUALIFICATION OF PERSONNEL

a. Audit Scope

The NRC audit team reviewed the QA program to verify that it provided for the indoctrination and training of personnel performing activities affecting quality to assure that proficiency was achieved and maintained. Specifically, the NRC audit team verified that the applicant, GE, and associated vendors adequately implemented and maintained personnel training and qualification processes.

b. Observationsb.1 Policies and Procedures for Training and Qualification of Personnel

The applicant's operations QA plan provides the overall requirements for qualification, training, and certification of personnel whose activities may affect structures, systems, components and activities at STP.

GE's QA program description, NEDO-11209-04A, Revision 8, states, in part, that training and experience qualifications are defined for each position in GE. In addition, the QA program provides for indoctrination and training of personnel performing activities affecting quality in order to provide assurance that proficiency is achieved and maintained.

Bechtel's nuclear QA manual, NQAM Revision 4, outlines the requirements and responsibilities for indoctrination and training programs required to assure that personnel performing activities affecting quality have proficiency levels commensurate with their work requirements.

#### b.2 Procedural Training

GE procedure, EOP 75-5.00, "Quality and Technical Training," Revision 14, defines the quality and technical process established by GE to assure personnel proficiency in quality-related activities as required by GE Procedure 70-30. This procedure states:

"Qualifications for technical positions, including minimum education, experience, and/or special training requirements, shall be documented."

"Training assignments and completion records for GE personnel shall be recorded and maintained in a centralized training database controlled as a Quality Information System."

GE determines and administers the training necessary for individuals employed by ERIN and Maracor and also retains these records in its database.

#### b.3 Technical Training

STP procedure, OPGP04-ZA-0010, "Engineering Support Personnel Qualification," Revision 11, establishes the requirements for training engineering support personnel who perform functions related to plant safety. This procedure details the supervisor's and training coordinator's responsibilities in assigning and approving training, monitoring any individual's progress, and maintaining records in the site database.

Bechtel procedure, 3DP-G05G-00034, "Engineering Department Procedure Instruction Quality Indoctrination/Orientation and Training," Revision 2 establishes the requirements for general quality indoctrination and quality-related training of engineering personnel. The procedure states: "All engineering department personnel who perform quality-related activities shall receive: General indoctrination/orientation on the quality program and engineering department procedure (EDP) system within 90 days of hire or assignment. Specific training on the EDPs and Engineering department procedure instructions (EDPIs) that they will implement on project and/or staff assignments."

#### b.4 Supplier Training

MACTEC's Procedure of Qualification of Personnel, QAP 20-1, establishes the requirements for the qualification of personnel to perform inspections, examinations, and testing at nuclear power plants, or on materials destined for use at these plants. The procedure states: "The qualifications of personnel employed by MACTEC will be documented." "A file of records of personnel qualifications will be maintained and available for audit at the appropriate MACTEC office or project office."

The procedure defines the minimum capabilities, education, and experience that qualify personnel to perform inspections, examinations, and testing on the project.

b.5 Qualification Records Review

The NRC audit team reviewed a sample of qualification records from the applicant and its vendors to verify that individuals were indoctrinated and records were maintained in accordance with procedures. The NRC audit team reviewed records for individuals from engineering and QA, including GE's suppliers, ERIN and Maracor and ABS consulting who is a supplier for Bechtel. Although training and qualification records were completed and maintained in accordance with the requirements of the applicant's program, the NRC audit team did note that the applicant had self-identified training deficiencies related to the COLA development program and initiated the corrective action process to address these deficiencies (CAR 42725). This issue is further described in Section 3.9 of this report.

c. Conclusions

The NRC audit team concluded that, with the exception noted in Section 3.9 of this report regarding training deficiencies, the training and qualification requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. Qualification records were found to be in accordance with the applicant's and its sub-supplier's procedural requirements.

### 3.13 10 CFR PART 21 IMPLEMENTATION

a. Audit Scope

The NRC audit team reviewed STP's, GE's and Bechtel's policies and procedures to ensure an adequate description of the process for implementing Part 21 requirements. Additionally, the team reviewed Bechtel's imposition of Part 21 on its subcontractors. These reviews were performed to determine if requirements for quality-related activities, consistent with Part 21, were being adequately implemented.

b. Observations

b.1 Policies and Procedures for Part 21 Controls

(l) Bechtel Power Corporation

The NRC audit team reviewed Section Q-16.2 of Bechtel's NQAM, that outlined the responsibilities for reporting defects. This section defined responsibilities, established requirements, and provided guidance for action necessary to implement Part 21.

The NRC audit team did make an observation concerning MACTEC and REI's Part 21 evaluation procedure.

The procedures of these suppliers lacked sufficient detail to inform affected customers when MACTEC or REI determines that it does not have the capability to perform the evaluation required by 10 CFR 21.21(a)(1). Both observations are detailed below.

**b.2 Bechtel Power Corporation's Audit Activities Regarding Part 21 Controls**

The NRC audit team reviewed a sample of audits and surveillances conducted by Bechtel, as described below.

**(I) Report No. ESL-2006-003, Bechtel audit of Risk Engineering, Inc.**

The NRC audit team reviewed a Bechtel audit of REI, audit report No. ESL-2006-003, conducted on January 25 through 27, 2006. In addition to verifying implementation of Appendix B requirements, Bechtel assessed Part 21-related activities during this audit. At the end of the Bechtel audit, three findings were identified in the areas of design, audits, and software QA. In addition, four observations and one recommendation were documented on administrative discrepancies. Bechtel determined that the QA program was satisfactory and effectively implemented in the audited areas.

The NRC audit team noted that one of the observations highlighted in the Bechtel report identified that REI did not have a mechanism to notify affected customers if REI identifies a potential defect as described in Section 2.10 of REI's QAM, "Reporting Defects and Noncompliance to NRC - Regulation 10 CFR Part 21." To verify the scope of Bechtel's audit activities regarding Part 21, the NRC audit team reviewed Bechtel's safety-related checklist form SQ-396A utilized in audit activities. The NRC audit team noted that Bechtel performs the following verification activities regarding Part 21 controls using this checklist:

- Verification of postings in accordance with 10 CFR 21.6.
- Verification of a mechanism to determine if a Part 21 condition exists.
- Verification of a mechanism to provide notification to customers or the NRC when a failure to comply or defect is discovered.
- Verification of any reportable instances within the previous 3 years.

Although Bechtel concluded in this audit that Section 2.10 of REI's QAM contained adequate controls regarding Part 21, the NRC audit team's review of Section 2.10 of REI's QAM revealed that REI did not have a mechanism to inform affected customers if REI determines that it does not have the capability to perform the evaluation required in 10 CFR 21.21(a)(1).

Additionally, the NRC audit team noted that the REI's Part 21 procedure referred to identification of *defects* that are determined to be "significant" by the QA Manager. Defects, as defined in 10 CFR 21.3, are deviations that have gone through the evaluation process and such evaluation concluded the existence of a significant safety hazard (SSH). The NRC audit team determined that REI's Part 21 procedure were not in accordance with the provisions of the regulation.

The NRC audit team discussed REI's Part 21 program with Bechtel's QA manager. At the time of the exit meeting, Bechtel's QA manager had taken steps with REI to revise the QAM

procedure to include provisions for informing affected customers if REI determines that it does not have the capability to perform the evaluation required in 10 CFR 21.21(a)(1). The NRC audit team considered Bechtel's proposed actions reasonable to address this issue.

- (ii) Report No. 25242-QSVA-06-001, Bechtel audit of MACTEC Engineering and Consulting, Inc.

The NRC audit team reviewed a Bechtel audit of MACTEC conducted on May 3 through 5, 2006. One finding was identified in the area of procurement as a result of the Bechtel audit. The NRC audit team noted that Bechtel utilized the safety-related checklist form SQ-396A and, in addition to verifying implementation of Appendix B requirements, Bechtel assessed Part 21-related activities.

The NRC audit team reviewed MACTEC's QAM and procedure related to Part 21, titled "Reporting Nuclear-Related Deficiencies, Defects, or Noncompliances per Federal Regulation 10 CFR Part 21 and Section 206 of the ERA of 1974," Revision 1, dated August 25, 2004. The NRC audit team noted that MACTEC did not have a mechanism to inform affected customers if MACTEC determines that it does not have the capability to perform the evaluation required in 10 CFR 21.21(a)(1). Although Bechtel found the Part 21 controls satisfactory in its audit report, the NRC audit team noted that this activity had not been evaluated. The NRC audit team determined that MACTEC's Part 21 procedure were not in accordance with the provisions of the regulation.

The NRC audit team discussed the inadequate verification of Part 21 controls by the Bechtel's audit team and MACTEC's Part 21 program with Bechtel's QA manager. At the time of the exit meeting, Bechtel's QA manager had taken initial steps with MACTEC to revise the QAM procedure to include provisions for informing affected customers if MACTEC determines that it does not have the capability to perform the evaluation required in 10 CFR 21.21(a)(1). The NRC audit team considered Bechtel's proposed actions reasonable to address this issue.

Although Bechtel included the necessary guidance in its safety-related audit checklist to properly verify Part 21 requirements, the NRC audit team determined that Bechtel did not completely verify its sub-suppliers' Part 21 controls, and when weaknesses were identified during the audit process, Bechtel did not take adequate actions within the audit process to inform the sub-supplier of these weaknesses. The NRC audit team concluded that this issue had the potential to affect the completeness and accuracy of the STP COLA in that the evaluations of deviations on nonconformances may not have been performed as required by 10 CFR Part 21. Therefore, the applicant is requested to provide a description of the actions taken to address the apparent deficiency in the Bechtel sub-supplier verification process. This is identified as audit response request (ARR-004).

c. Conclusions

The NRC audit team concluded that, with the exceptions noted above, the Part 21 requirements have been appropriately translated into implementing procedures and, for those activities reviewed by the team, implemented as required by the applicant's and/or its sub-supplier's procedures to support the STP COLA development program. The NRC audit team did identify an issue requiring additional action by the applicant prior to completion of the COLA (ARR-004).

### 3.14 Regulatory Guide 1.206 Consistency Evaluation

#### a. Audit Scope

Upon receipt of a COLA, the NRC staff will perform a review of the application in order to determine its acceptability for docketing. This review will ensure that the COLA addresses the information required by 10 CFR Part 52. In order to assist applicants in the preparation of their COLAs, the staff issued RG 1.206. The NRC audit team reviewed selected parts of the completed sections of the STP COLA against the guidance in the RG. The NRC audit team also discussed, with the applicant and its contractor, their handling of departures from the DCD, their means of identifying and tracking COLA action items, their programs to ensure that individual COLA sections are of high quality, and their overall COLA production schedule.

#### b. Observations

A significant portion of the STP COLA consists of incorporation of the DCD by reference. At the time of review, the STP COLA was only about 30 percent complete and a significant amount of the COLA material that does not incorporate the DCD by reference had not yet been completed. This lack of data made it difficult to formulate a judgement as to the applicant's overall adherence with the RG.

The applicant has identified about 6 Tier 1 departures from the DCD and about 50 Tier 2 departures. Tier 1 departures in the COLA identify the Standard Departures that justify them. Tier 2 departures from the DCD are clearly identified and are justified accordingly.

The applicant appears to have been thorough in identifying and tracking all COLA action and/or information items. The safety evaluation report for the ABWR does not contain an appendix that identifies all of the COLA action items. The applicant's contractor, however, had retained a list of identified COLA action items from the design certification stage. The applicant and its contractors then conducted a thorough review of the DCD to find any additional COLA action items. The results of this review of the DCD were subjected to peer review and resulted in an additional population of items that a COLA applicant must address that were not previously identified in the DCD.

#### c. Conclusions

At the time of this review, the application was only about 30 percent complete with the majority of the sections that do not incorporate the DCD by reference still under development. The applicant is actively scheduling and managing both its own activities and the activities of its contractors regarding production of the COLA.

## **4.0 ENTRANCE AND EXIT MEETINGS**

In the entrance meeting on May 21, 2007, the NRC audit team discussed the scope of the audit, outlined the areas to be reviewed, and established interfaces with STP, GE, and its sub-supplier's staffs and management involved in the STP COLA development. In the exit meeting

on May 24, 2007, the NRC audit team discussed the audit activities conducted during the audit, and identified issues associated with the COLA development with representatives of STP, GE, and its sub-supplier's management and staff.

## 5.0 PARTIAL LIST OF PERSONS CONTACTED

NAME	POSITION	AFFILIATION
M. Harvey*	Quality Assurance Manager	General Electric
YC Lee*	Lead/Senior Quality Engineer Nuclear	General Electric
W. Massie*	GE Licensing	General Electric
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D. Leigh*	STP Quality	South Texas Project
M. Smith*	STP QA Manager	South Texas Project
TV Sarma*	Nuclear Manager of Quality Assurance	Bechtel Engineering
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R. Patel**	ABWR Engineering Manager	General Electric
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