Nuclear Operating Company

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

March 17, 2010
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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Responses to Request for Additional Information

Attached is the response to NRC staff questions included in Request for Additional Information (RAI) letter number 315, related to Combined License Application (COLA) Part 2, Tier 2, Section 9.4.4, "Turbine Island HVAC System" and letter number 319 related to COLA Part 2, Tier 2, Section 17.5S "Quality Assurance Program Guidance." This letter completes the responses to these RAI letters.

Attachments to this letter provide the following RAI responses:

09.04.04-1 17.05-9

Where there are COLA markups, they will be made at the first routine COLA update following NRC acceptance of the RAI response.

There are no commitments in this letter.

If you have any questions regarding these responses, please contact me at (361) 972-7206, or Bill Mookhoek at (361) 972-7274.

D091
NRO

STI 32631907

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 3/17/2010

Mark McBurnett
Vice-President, Oversight and Regulatory Affairs
South Texas Project Units 3 & 4

jaa

Attachments:
1. RAI 09.04.04-1 Response
2. RAI 17.05-9 Response

cc: w/o attachments and enclosure except*
(paper copy)

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RAI 09.04.04-1

QUESTION:

The present RAI is based on the NRC staff's recent site audit findings about the Tier 2 departure STD DEP 9.4-9: "Turbine Building HVAC System," for South Texas Units 3 & 4. The applicant needs to address the following three staff concerns about the radiological consequences of the proposed once-through air-supply system; and raising the temperature in the two MSR (Moisture Separator Reheator) areas of the Turbine Building (TB).

- The applicant must justify the determination it made under 10 CFR Part 52, Appendix A, Section VIII.B.5 (Step 7) by furnishing an analysis that would demonstrate that changing the certified recirculating HVAC system to a once-through air supply system would not result in an increase in the operational dose released from the TB to individual members of the public, and will follow the 10 CFR Part 20.1301 dose limits for normal plant operation. The staff is concerned that the proposed once-through system may increase the operational dose to the public beyond its design basis limit by enhancing the release of radionuclides from the TB and reducing their residence time inside the building to decay.

- The staff noted during the audit that all air streams inside the TB are combined into one stream which is exhausted through the plant stack and is monitored for the operational dose to individual members of the public under normal plant operation, as required by 10 CFR Part 20.1302. However, the overall flow rate of the combined air stream through the stack is not measured but rather computed by summing up the measured individual stream flow rates from various areas inside the TB. The applicant is requested to make provisions for the measurement of the overall air flow rate through the plant stack in order to reduce the uncertainties involved in monitoring the radioactive effluents due to the unaccounted-for air flows, such as, building air infiltration.

- STD DEP 9.4-9 increased the temperature in the two MSR (Moisture Separator Reheator) areas inside the TB from 49 C (120.2 F) to 60 C (140 F). The applicant is requested to identify any safety-related equipment/instrumentation located in the MSR areas and confirm that they are qualified for the proposed elevated MSR temperature, as per 10 CFR Part 50, Appendix B and GDC 1. The applicant is also requested to state whether or not an operator would need to enter the high temperature, high radiation MSR areas to support a safety-related function or to mitigate an accident and if so, identify any additional provisions needed or made by the applicant to offset the high heat stress due to the MSR area temperature rise.

RESPONSE:

The response to the three bulleted questions above is as follows:

Bullet 1

The operating modes for the Turbine Building HVAC System were originally described in the Design Control Document (DCD) as follows, with changes resulting from STD DEP 9.4-9, Turbine Building HVAC System shown by strikethrough and underlining:

9.4.4.1.1 Safety Design Bases

The T/B HVAC and ~~E/B~~ EEA HVAC Systems do not serve or support any safety function and have no safety design bases.

9.4.4.1.2 Power Generation Design Bases

(5) Exhaust air from potentially high airborne concentrations in turbine building areas or component vents is collected, filtered and discharged to the atmosphere through the Turbine Building Compartment Exhaust (TBCE) System.

(6) Exhaust air from other (low potential airborne concentrations) Turbine Building areas and component vents, except lube oil areas, is ~~either~~ exhausted to the atmosphere through a medium efficiency filter~~, or is returned to the supply air unit and mixed with outside air~~.

9.4.4.2.1 T/B HVAC General Description

Potentially high radioactive concentration exhaust air is filtered and discharged to the atmosphere. Exhaust air from clean and low potential airborne contamination areas is ~~either~~ discharged to the atmosphere ~~or recirculated~~.

The information from the DCD reproduced above (that is not struck through) was not impacted by STD DEP 9.4-9, was incorporated by reference into the STP 3 & 4 FSAR, and has finality. STPNOC considers that once-through Turbine Building HVAC System operation as described in DCD Subsections 9.4.4.1.2 (5) and 9.4.4.2.1 above is the limiting case regarding potential offsite releases from the Turbine Building HVAC System. Elimination of the recirculation mode for exhaust air from low potential airborne concentration areas (Subsection 9.4.4.1.2.(6)) represents no potential adverse impact. The DCD description of this system did not credit hold-up time during recirculation from low potential airborne contamination areas (or high potential contamination areas) to minimize release levels. Therefore the conclusion reached by the original Part 52 evaluation is not affected by this departure, and does not require additional justification or analysis.

In addition, 10 CFR Part 52, Appendix A, Section VIII.B.5.b. (7), which concerns compliance with design basis limits for fission product barriers, is not implicated by this departure. As explained in the NRC Inspection Manual Guidance for interpretation of 10 CFR 50.59, "For operating power reactors, the fission product barriers are the fuel clad,

reactor coolant system boundary, and containment, and the design basis limits are the values for such parameters as DNB ratio, RCS design pressure, or containment design pressure." Since this change does not affect compliance with any of these limits for a fission product barrier, 10 CFR Part 52, Appendix A, Section VIII.B.5.b. (7) does not affect the analysis of this departure.

Bullet 2

Determination of the release rate from the plant stack is accomplished with the isokinetic sampling system described in FSAR section 11.5.2.2.4 "Plant Stack Discharge Radiation Monitoring." Determination of the plant stack release rate using the isokinetic sampling system will not rely on flow measurement inputs from individual waste streams entering the stack. The final configuration of the stack flow instruments associated with the isokinetic sampling system will be established during detailed design.

Bullet 3

Regarding Turbine Building inside air temperature upper design limits, the change from 49°C to 60°C for the moisture separator reheater (MSR) compartments was done to ensure consistency with the DCD in Appendix 3I, Equipment Qualification Environmental Design Criteria. Table 3I-6 of Appendix 3I provides a temperature of 60°C as the normal qualification temperature for the turbine building zone. Therefore this change made by STD DEP 9.4-9 is making the temperatures provided in DCD section 9.4.4.1.2 consistent with DCD Appendix 3I, Table 3I-6. DCD Table 3I-6 was incorporated by reference into the STP 3 & 4 FSAR with no changes.

The DCD does not describe safety related equipment or instrumentation in the MSR compartments and STPNOC does not anticipate any reason this would change during detailed design of STP 3 & 4. This precludes the need for anticipated operator actions in this area during accident scenarios.

The responses provided above do not require any change to the COLA.

RAI 17.5-9

QUESTION:

STP Units 3 &4 QAPD, Part IV, "Regulatory Commitments," identifies Regulatory Guides (RGs) and other quality assurance standards to which STPNOC complies. FSAR Section 1.9S, "Conformance with Regulatory Criteria," identifies regulatory and industry guidance to which the STP conforms.

The NRC issued RAI 17.5-8, in part, to ask STP to provide a description of STP's plan to incorporate revisions to NEI 06-14A, "Quality Assurance Program Description." Your response, dated October 21, 2008, indicated that STPNOC planned to comprehensively evaluate NRC approved revisions to NEI 06-14A and revise the QAPD to incorporate applicable changes. The NRC issued RAI 01-14 to ask the STP to provide a list of conformance/exceptions of regulatory guides related to quality assurance for the OQAP and QAPD. Your response, dated October 29, 2009, which provided an excerpt from Part IV of the QAPD, Revision 2, and a matrix of conformance with RGs with respect to the OQAP and the QAPD. STPNOC submitted Revision 2 of its QAPD to the NRC by letter dated September 30, 2009, which incorporated responses to RAIs and changes to the latest revision of NEI 06-14. This revision does not fully address all the specific areas the NRC noted in its SER for NEI 06-14, Revision 7, dated November 3, 2009.

a) The QAPD states that RG 1.28, Revision 3, "Quality Assurance Program Requirements (Design and Construction)," Regulatory Position C.2 is addressed in Section 17.1. Section 17.1 states that the records and retention times are "based on" Regulatory Position C.2 and Table 1 of RG 1.28, Revision 3, but does not provide a list of records and retention times or commit to those sections of the RG. Please provide a list of records and retention times or commit to Regulatory Position C.2 and Table 1.

b) The QAPD identifies an alternative to RG 1.33, Revision 2, "Quality Assurance Program Requirements," issued February 1978, Regulatory Position C.2 by committing to NQA-1-1994 in the QAPD rather than the ANSI 45.2 series standards listed in the RG. However, the RG also lists other ANSI standards other than N45.2 series. Please describe how each of how each of the standards listed in the RG are met.

The QAPD identifies an alternative to Regulatory Position C.4 by committing to comply with the quality standard described in NQA-1-1994, Basic Requirement 18 and Supplement 18S-1. The QAPD identifies an alternative to Regulatory Position C.5 by providing adequate guidance for establishing a quality assurance program that complies with 10CFR 50, Appendix B, by using NQA-1-1994, as supplemented by additional regulatory and industry guidance identified in SRP Section 17.5. These are similar to the alternatives proposed in NEI 06-14, Revision 7. In order to demonstrate that the QAPD has incorporated all of the administrative controls in ANSI N18.7-1976 not included in NQA-1-1994, the STP must develop a line by line comparison of the requirements of ANSI N18.7-1976, the QAPD, and NQA-1-1994 similar to those prepared by operating reactors to support adoption of NQA-1-1994. Otherwise, the STP must commit to RG 1.33.

c) Conformance with the RGs listed in Part IV, specifically RGs 1.8, 1.26, 1.28, 1.29, 1.33, and 1.37, are inconsistent with those listed in FSAR Chapter 1.9S, "Conformance with Regulatory Criteria." Please clarify FSAR Chapter 1.9S and Part IV of the QAPD as appropriate.

d) The QAPD, Part IV, identifies a commitment to ASME NQA-1-1994, "Quality Assurance Requirements for Nuclear Facility Applications," Parts I and II. However, the QAPD, Section 13.2, identifies another commitment to NQA-1-1994, Part III. Please include the commitment to NQA-1-1994, Part III, in Part IV of the QAPD.

RESPONSE:

The response to a), b), c) and d) above is as follows:

a) It is STPNOC's intent that records and their associated retention times be identical to those listed in Regulatory Guide 1.28, Revision 3, Table 1.

As a result of this RAI response to question a), Part II, Section 17.1 of the QAPD will be revised as follows with changes indicated by gray shading:

17.1 Record Retention

Measures are established that ensure that sufficient records of completed items and activities affecting quality are appropriately stored. Records of activities for design, engineering, procurement, manufacturing, construction, inspection and test, installation, pre-operation, startup, operations, maintenance, modification, decommissioning, and audits and their retention times are defined in appropriate procedures. The records and retention times comply with ~~are based on~~ Regulatory Position C.2 and Table 1, of Regulatory Guide 1.28, Revision 3 for design, construction, and initial start-up. STPNOC commits to Regulatory Position C.2 and Table 1. Retention times for operations phase records are based on construction records that are similar in nature. In all cases where state, local, or other agencies have more restrictive requirements for record retention, those requirements will be met.

b) RG 1.33, Regulatory Position C.2:

The other ANSI standards listed in RG 1.33 (besides the ANSI 45.2 series) are addressed as follows:

ANSI N18.1 (RG 1.8, Personnel Selection and Training): Addressed below in the second part of question b).
ANSI N18.17 (RG 1.17, Protection of Nuclear Power Plants Against Industrial Sabotage): This standard has been withdrawn/superseded and the RG has been withdrawn. This subject is addressed by 10 CFR 73 Physical Protection of Plants and Materials.

ANSI N101.4: ANSI N101.4 has been withdrawn and replaced with several other standards as discussed in RG 1.54, Revision 1, July 2000, Service Level I, II, and III Protective, Coatings Applied to Nuclear Power Plants. Regulatory Guide 1.54 describes the methods acceptable to the NRC staff for complying with the Commission's regulations with regard to Service Level I, II, and III Protective, Coatings Applied to Nuclear Power Plants.

STPNOC will implement RG 1.54 Revision 1, July 2000. RG 1.54 is added to the FSAR and QAPD as shown in the markups for question c) below.

RG 1.33, Regulatory Position C.4:

The line-by-line comparison requested by question b) of this RAI was previously conducted by the Nuclear Energy Institute (NEI) QA task force to ensure that the requirements of ANSI N18.7-1976, NQA-1-1994 and the industry QA template for new plants (NEI 06-14A) were equivalent. Since the STP 3 & 4 QAPD is based on NEI 06-14A, it was appropriate for STPNOC to review the task force's comparison results against the STP 3 & 4 QAPD. This review has been conducted and STPNOC agrees with the conclusion reached by the QA task force, that certain of the operational requirements addressed by RG 1.33 have not been directly addressed by NEI 06-14A (and therefore the QAPD). STPNOC proposes to correct the QAPD in the same manner as NEI's Revision 8 to NEI 06-14A, by the addition of a new part "V Additional Quality Assurance and Administrative Controls for the Plant Operational Phase." NEI 06-14A has been submitted to the NRC for review and approval. STPNOC's next revision to the QAPD will incorporate Revision 8 of NEI 06-14A with site specific information inserted where called for.

c) Inconsistencies between FSAR Table 1.9S-1 and Part IV of the QAPD concerning RGs 1.8, 1.26, 1.28, 1.29, 1.33, and 1.37 will be corrected by revision to Table 1.9S-1 and the QAPD. In addition, an inconsistency in Table 1.9S-2 (for RG 1.33) will be corrected by revision to Table 1.9S-2. Also, RG 1.54 is being added to Table 1.9S and the QAPD as discussed in question b) above.

As a result of this RAI response to question c), FSAR Table 1.9S-1, Table 1.9S-2 and Part IV of the QAPD will be revised as follows with changes indicated by gray shading:

Table 1.9S-1:

Table 1.9S-1 Site-Specific Conformance with Regulatory Guides

No.	Title	Rev.
Division 1		
1.3	Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss-of-Coolant Accident for Boiling Water Reactors	2 (6/74)
1.5	Assumptions Used for Evaluating the Potential Radiological Consequences of a Steamline Break Accident for Boiling Water Reactors	0 (3/71)
1.6	Independence Between Redundant Standby (Onsite) Power Sources and Between Their Distribution Systems	0 (3/71)
1.8	Personnel Selection and Training	See QAPD

		Part IV
1.21	Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants	1 (6/74)
1.22	Periodic Testing of Protection System Actuation Functions	0 (2/72)
1.23	Meteorological Monitoring Programs for Nuclear Power Plants	1 (3/07)
1.25	Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors	0 (3/72)
1.26	Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste- Containing Components of Nuclear Power Plants	See QAPD Part IV
1.27	Ultimate Heat Sink for Nuclear Power Plants	2 (1/76)
1.28	Quality Assurance Program Requirements (Design and Construction)	See QAPD Part IV
1.29	Seismic Design Classification	4 (3/07) See QAPD Part IV
1.33	Quality Assurance Program Requirements (Operations)	See QAPD Part IV
1.37	Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	See QAPD Part IV
1.43	Control of Stainless Steel Weld Cladding of Low-Alloy Steel Components	0 (5/73)
1.53	Application of the Single-Failure Criterion to Nuclear Power Plant Protection Systems	2 (11/03)
1.54	Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants	See QAPD Part IV
1.59	Design Basis Floods for Nuclear Power Plants	2 (8/77)
1.60	Design Response Spectra for Seismic Design of Nuclear Power Plants	1 (12/73)
1.61	Damping Values for Seismic Design of Nuclear Power Plants	1 (3/07)

Table 1.9S-2:

Table 1.9S-2 Conformance with Regulatory Guides Noted as "COL Applicant" in DCD

No.	Title	Conformance
1.33	Quality Assurance Program Requirements (Operations), ~~Rev. 2~~	~~Not applicable. The STP 3 & 4 Quality Assurance Program Description commits to NQA-1-1994.~~ See QAPD Part IV

QAPD Section IV:

PART IV REGULATORY COMMITMENTS
NRC Regulatory Guides and Quality Assurance Standards

Regulatory Guides:

Regulatory Guide 1.29, Revision ~~3, September 1978~~ 4, March 2007– Seismic Design Classification

Regulatory Guide 1.54, Revision 1, July 2000, Service Level I, II, and III Protective, Coatings Applied to Nuclear Power Plants

Regulatory Guide 1.54 describes the methods acceptable to the NRC staff for complying with the Commission's regulations with regard to Service Level I, II, and III Protective, Coatings Applied to Nuclear Power Plants.

STPNOC implements RG 1.54 Revision 1, July 2000.

d) The commitment to NQA-1-1994, Part III, in Part IV of the QAPD, will be added to the QAPD.

As a result of this RAI response to question d), Part IV of the QAPD will be revised as follows with changes indicated by gray shading:

PART IV REGULATORY COMMITMENTS
NRC Regulatory Guides and Quality Assurance Standards

Standards:

ASME NQA-1-1994 Edition – Quality Assurance Requirements for Nuclear Facility Applications STPNOC commits to NQA-1-1994, Parts I, ~~and~~ II, and III as described in ~~the foregoing sections~~ Parts II and V of this document.