



South Texas Project Electric Generating Station 4000 Avenue F – Suite A Bay City, Texas 77414

August 18, 2010
U7-C-STP-NRC-100185

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
Response to Request for Additional Information

Reference: Letter, Scott Head to Document Control Desk, "Response to Request for Additional Information," dated May 19, 2010, U7-C-STP-NRC-100112 (ML101410206).

This letter revises the Supplemental Response to Request for Additional Information (RAI) 19.01-25 provided in the Reference. The attachment to this letter addresses the following RAI:

19.01-25, Revised Supplemental Response

When a change to the COLA is indicated, it will be incorporated into the next routine revision of the COLA following NRC acceptance of the RAI response.

There are no commitments in this letter.

If you have any questions regarding this submittal, please contact Scott Head at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

STI 32716187

DO91
NRC

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

Executed on 8/18/10



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

dws

Attachment:

RAI 19.01-25, Revised Supplemental Response

cc: w/o attachment except*
(paper copy)

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RAI 19.01-25

QUESTION:

The applicant provided supplemental COL license information in Section 19.9 to address the Resolution of the COL license information, which the applicant asserted could not be completed before the issuance of the COL license. In accordance with RG 1.206, Section C, Part III, Section C.III.4, subsection C.III.4.3, the applicant is requested to provide additional information to support the issuance of COL.

Please provide your plan, including the implementation schedule, for addressing the Resolution of the COL license items and commitments in Section 19.9 and commitments in Section 19.4S, as described in RG 1.206, Section C, Part III, Section C.III.4, subsection C.III.4.3.

REVISED SUPPLEMENTAL RESPONSE:

This Revised Supplemental Response to Request for Additional Information (RAI) item 19.01-25 provides additional information concerning COL Applicant Items 19B.2.27 and 19B.2.35 in Appendix 19B. The information in this RAI revises and replaces the information provided in U7-C-STP-NRC-100112, dated May 19, 2010 (ML101410206).

The COLA will be revised as shown below to incorporate additional information on the COL License Applicant Item 19B.2.27 in Appendix 19B.

19B.2.27 C-1: Assurance of Continuous Long-Term Capability of Hermetic Seals on Instrumentation and Electrical Equipment

Resolution

The following supplement is provided to address information required by the COL License Applicant in Appendix 19B.

Update

NUREG-0588 was considered in the design of the ABWR (Table 1.8-22). FSAR Section 3.11.6 discusses the Environmental Qualification program for STP Units 3 and 4.

The STP 3&4 Environmental Qualification (EQ) Program, as described in document U7-PROJ-K-PRD-0025 was developed to meet the requirements of Regulatory Guide 1.89, Rev 1, which includes compliance with NUREG-0588.

Some of the specific provisions of the EQ Program document relating to qualification of seals are provided below.

In section 6.2.4, Performance Specifications, the following is stated:

Equipment specifications shall include the following characteristics, as applicable:

- The goal for design and qualified life of the equipment is sixty years. The equipment and qualification specifications shall include the requirement to address equipment which may have a design or qualified life shorter than sixty years and address any maintenance requirements to maintain the design or qualified life in the equipment instruction manual and the qualification documentation as applicable.*

This section identifies requirements to address items that have a design life of less than 60 years and identify maintenance requirements to maintain the design or qualified life.

In section 6.3.2, Qualified and Design Life Goals, the following is provided:

Qualified life shall be established for safety-related equipment installed in a harsh environment. Equipment exposed to a harsh environment has a qualified life goal of 60 years plus DBA/post-DBA duration. The demonstration of qualified life is performed by testing and/or analysis and includes the applicable effects of aging. For components susceptible to aging, a qualified life is established that includes the effects of the radiation and temperature experienced at their respective locations within the plant coupled with wear, as applicable. When a 60 year qualified life is not achievable, a shorter qualified life is established and a replacement program is implemented. Shelf life shall be considered in the equipment qualification program for safety-related equipment. The environmental conditions for equipment storage (temperature, relative humidity, radiation, dust, etc.) under which shelf life was established shall be specified. This information shall be documented along with the qualified life determination and included in the equipment qualification data package for use in the STP 3&4 EQ maintenance program for verification of qualified life adequacy...

... The report shall include a list of components that are susceptible to degradation due to effects of the said parameters. The report shall identify nonmetallic materials in the component (e.g. o-rings, hermetic seals, etc.) that are subject to degradation due to environmental conditions and their basis to perform the required functions successfully during their target life. Maintenance & Surveillance (M&S) requirements and replacement frequencies of parts that are subject to environmental degradation shall be also provided.

This section identifies several aspects of qualification that relate to seals, including effects of radiation, temperature and wear. It addresses concerns associated with equipment storage conditions and shelf life and that all these aspects need to be documented in the EQ qualification package. It also specifically calls out that nonmetallic material such as found in o-rings and seals shall be identified in the documentation and addressed in the maintenance and surveillance requirements, including replacement frequencies for these items, as appropriate.

Section 7.1.1.1, Submergence, states the following:

Electric equipment located in an area where rapid pressure changes are postulated simultaneously with the most adverse relative humidity should be qualified to demonstrate that the equipment seals and vapor barriers will prevent moisture from penetrating into the equipment to the degree necessary to maintain equipment functionality.

This addresses concerns with respect to seals performing their function to prevent moisture intrusion in a manner that maintains equipment functionality.

In section 9.1.3, Maintenance & Surveillance Requirements to Maintain Qualification, it states:

The equipment qualification documentation shall identify any special requirements to maintain the qualification status following maintenance, testing or calibration activities.

This provides direction that information relating to actions required to maintain qualification following maintenance, testing or calibration activities, which is often the case with seals or o-rings, is to be described in the equipment qualification documentation.

Lastly, section 10.1.9, Environmental Qualification Document (the STP maintained EQ documentation), states

Environmental Qualification Document (EQD) will be prepared summarizing the environmental qualification reports for all safety-related electrical and mechanical equipment located in harsh environments. The EQD as a minimum includes the following:

c) Identification of maintenance that potentially could invalidate the environmental qualification of the equipment. The equipment qualification documentation shall identify any special requirements to maintain the qualification status following maintenance, testing, or calibration activities.

This provides assurance that required environmental qualification information will be maintained in the STP 3&4 EQ program documents. The EQ program also states that this information will be maintained in an EQ database, which will allow monitoring and tracking of items related to seals and o-rings and in the EQ maintenance program.

The COLA will be revised as shown below to incorporate additional information on the COL License Applicant Item 19B.2.35 in Appendix 19B.

19B.2.35 51: Proposed Requirements for Improving the Reliability of Open Cycle Service Water Systems

Resolution

The following supplement is provided to address information required by the COL License Applicant in Appendix 19B:

Update

The information required from the COL Applicant is provided in Section 9.2.5.4 (Ultimate Heat Sink (UHS)), and Section 9.2.15 (Reactor Service Water (RSW)).

Specifically:

- Ice as a flow blockage mechanism is discussed in Section 9.2.5.7.3.
- Direct service water is not used for component cooling. Transfer of heat from the component heat loads via a heat exchanger to the service water system and ultimate heat sink is discussed in section 9.2.5.3.1.
- Reactor service water is treated as needed to reduce the effect of mud, silt, or organisms, as described in Section 9.2.5.4.1.
- Materials for piping, pumps, and heat exchangers that offer greater resistance to the range of probable water chemistry conditions are described in Section 9.2.5.8.
- Provisions to facilitate the inspection of service water piping are described in Section 9.2.5.3.1. Replacement of Reactor Service Water piping sections during plant life will be in accordance with the ASME Section XI program as described in Section 6.6.
- The STP well water system provides the non-safety related makeup capability for the ultimate heat sink as described in Section 9.2.5.3.4.
- The Ultimate Heat Sink and the Reactor Service Water system meet the design bases during a loss of offsite power. These systems are designed to perform their cooling function assuming a single active failure in any mechanical or electrical system as described in Section 9.2.5.8 and Section 9.2.15.2.1.