



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

June 30, 2010
U7-C-STP-NRC-100156

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 April 8, 2009: U7-C-STP-NRC-100079 (ML101040252).

This letter provides a supplemental response to Request for Additional Information (RAI) Question 12.03-12.04-11, related to COLA Part 2, Tier 2, Section 11.2, "Liquid Waste Management System" previously responded to in the referenced letter.

The indicated change to the COLA will be included in the next routine revision of the COLA submitted after NRC acceptance of the RAI response.

There are no commitments in this letter.

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

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

Executed on 6/30/2010

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

scs

Attachment:
Question 12.03-12.04-11 Supplemental Response

DO91
L120

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

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RAI 12.03-12.04-11**QUESTION:**

In the response to RAI 12.03-12.04-3 questions 1 and 2 (Letter U7-C-STP-NRC-090121, ADAMS Document Number ML092430071), STP stated that 10 CFR 20.1406 was issued after the ABWR Design Certification Rule in 1997 and that 10 CFR 20.1406(b) is not applicable to the ABWR DCD. NRC staff agrees that STP does not need to address 10 CFR 20.1406(b) through licensing action for the ABWR DCD. However, 10 CFR 20.1406(a) requires that “Applicants for licenses, other than early site permits and manufacturing licenses under part 52 of this chapter and renewals, whose applications are submitted after August 20, 1997, shall describe in the application how facility design and procedures for operation will minimize, to the extent practicable, contamination of the facility and the environment, facilitate eventual decommissioning, and minimize, to the extent practicable, the generation of radioactive waste.” In addition, 10 CFR 52.79(a)(45) requires that ‘The information required by 10 CFR 20.1406’ be included in the FSAR in sufficient detail to enable the commission to reach a final conclusion.

In the response to RAI 12.03-12.04-3 question 3, STP provided a discussion of how the STP 3 & 4 radwaste system departures will address the requirements of 20.1406, noting that NEI 08-08, “Generic FSAR Template Guidance for Life-Cycle Minimization of Contamination” provides guidance on developing operational programs to address 20.1406 and stating that NEI 08-08 guidance will be used, to the extent practicable, when the STP 3 & 4 program and procedures are developed. In addition, the response states that all piping will be located in pipe tunnels or accessible surface trenches and that FSAR Subsection 11.2.1.2.4 will be revised to clarify that there is no piping buried in soils.

In order to make a determination of reasonable assurance that STP 3 & 4 will comply with the requirements of 10 CFR 20.1406, the staff requests that the applicant provide supplemental information to the response to RAI 12.03-12.04-3 to address the following:

1. Provide a complete description of the operational programs and operating procedures that STP 3 & 4 will utilize to address the requirements of 10 CFR 20.1406 in Chapter 12.3 of the FSAR. At a minimum the program description shall include the elements identified in Regulatory Positions C.1 thru C.4 of Regulatory Guide 4.21, including an initial evaluation of structures, systems, and components (SSC) and facility design features important to radiological safety that address the requirements of 10 CFR 20.1406 and form the basis of the operational programs and operating procedures that will be implemented. For reference, RG 4.21, Appendix A also contains numerous examples of measures that can be considered to address the requirements of 10 CFR 20.1406.
2. Include a summary in the FSAR Chapter 12.3 program description that discusses how STP 3 & 4 plans to address the requirements of 10 CFR 20.1406, including a cross reference to any applicable FSAR sections that already include discussions of design features or operational programs that are recognized in the 10 CFR 20.1406 operational programs and operating procedures.

3. Clarify whether the statement included in the response to RAI 12.03-12.04-3 concerning piping being located in tunnels or accessible surface trenches is applicable only to liquid radwaste system piping, or if it applies to all STP 3 & 4 piping.
4. If the statement concerning piping being located in tunnels or accessible surface trenches is applicable to all piping, provide appropriate reference(s) in FSAR chapter 12.3 to the applicable FSAR section(s) that contains or describes the design objective or criteria.
5. Provide a markup of the proposed FSAR changes in the response.

Supplemental Response:

The response to this RAI does not replace the information provided in STPNOC's response to RAI 12.03-12.04-3 but is supplemental information. The ABWR DCD has finality, and as recognized in the RAI the ABWR DCD is not required to address 10 CFR 20.1406. The provisions quoted in the RAI (i.e., 10 CFR 20.1406 and 52.79(a)(45)) were not established in accordance to 10 CFR 52.63. Therefore, in accordance with Section VI.D of the ABWR Design Certification Rule, STP is not required to provide any additional information or justifications with respect to the design as described in the DCD.

However, STPNOC recognizes that 10 CFR 20.1406 is applicable to STP Units 3 and 4 with respect to the design of structures, systems, and components that are outside the scope of the DCD, and to departures from the DCD. Additionally, STPNOC recognizes that 10 CFR 20.1406 is applicable to STP Units 3 and 4 as it pertains to operational programs. With this background, STPNOC provides the following answers to the RAI.

1. The operational programs and operating procedures that STP 3&4 will utilize to address the requirements of 10 CFR 20.1406 have not yet been written. As noted in COLA Part 2, Tier 2, Rev. 3, Subsection 13.5.3.3.2, these procedures will be issued six months prior to the commencement of the Preoperational Test Program.

However, STPNOC has reviewed the RG 4.21 Positions C.1 through C.4 and concludes that the operational programs and their procedural implementation at STP 3&4 will be consistent with the intent of RG 4.21. These programs and procedures will include provisions for:

- Work practices, preventive maintenance, and procedures to minimize leaks and spills and provide containment and early and adequate detection including instruments for detection. This includes surveillance and monitoring.
- Surveillance and maintenance to mitigate the consequences of undetected leakage over a long period of time.
- Operational practices subject to audit or inspection.

- Following construction, establishment of an onsite monitoring program as a part of the environmental monitoring program to prevent offsite migration of radionuclides via an unmonitored pathway.
- A system of records detailing contamination events and residual levels of environmental contaminants for the life of STP 3&4, readily accessible to facilitate cleanup, to facilitate decommissioning.
- Minimizing the generation of radioactive waste as a major operational consideration that will be addressed through careful work planning. Plant procedures will include provisions for proper packaging of wastes for transportation and acceptance by disposal or treatment facilities. Onsite storage is considered in certain circumstances as necessary.

Similarly, STPNOC's programs and procedures will be consistent with the intent of the examples of measures to control contamination described in Appendix A of RG 4.21.

A list of maintenance and other operating procedures for STP 3 & 4 is provided in COLA Part 2, Tier 2, Subsection 13.5.3.4.2, which includes plant radiation protection, chemical-radiochemical control, and radioactive waste management procedures. Subsection 13.5.3.4.3 lists radiation control procedures, including area radiation monitoring, process radiation monitoring, and meteorological monitoring procedures as well as procedures for discharge of effluents. As noted previously, these procedures and all others that relate to 10 CFR 20.1406 will be issued six months prior to the start of pre-operational testing. Operational programs that relate to 10 CFR 20.1406 requirements are listed in COLA Part 2, Tier 2, Table 13.4S-1, and include the Process and Effluent Monitoring and Sampling Program and Radiation Protection Program. 10 CFR 20.1406 requirements will also be considered in the development of these programs. A new supplemental 12.3.9 will be added to COLA Part 2, Tier 2.

2. The following is a summary that discusses features and programs that pertain to 10 CFR 20.1406:

- COLA Part 2, Tier 2, Rev. 3 Section 12.3 provides the facility radiation protection design features that are outside the scope of the ABWR DCD or represent departures from the DCD. COLA Part 2, Tier 2, Rev. 3 Section 12.5S provides a summary of the STP 3&4 operational radiation protection program based on Nuclear Energy Institute (NEI) Report No. NEI 07-03 including the facility organization structure. The organization is further explained in COLA Part 2, Tier 2, Rev. 3 Subsection 13.1.2. Personnel training is based on NEI No. 06-13 and discussed in COLA Part 2, Tier 2, Rev. 3 Section 13.2.
- COLA Part 2, Tier 2, Rev. 3 Section 12.5 provides information related to radiation protection facilities and equipment. Further information related to the radiation safety program including process and effluent radiological monitoring systems are described in COLA Part 2, Tier 2, Rev. 3 Sections 11.5 and 12.0.
- COLA Part 2, Tier 2, Rev. 3 Section 11.4, Solid Waste Management System presents information related to the relevant waste management processes. Information related to

plant procedures to implement the programs identified in COLA Part 2, Tier 2, Rev. 3 Section 12.5S and Table 13.4S-1 is given in COLA Part 2, Tier 2, Rev. 3, Section 13.5.

- Departures from the DCD design pertaining to 10 CFR 20.1406 are also summarized in the new supplemental COLA Part 2, Tier 2, Subsection 12.3.9.
3. STPNOC's response to RAI 12.03-12.04-3 is clarified by stating that for STP 3 & 4 all piping containing radioactive liquids will be located in pipe tunnels. Although there is some direct buried piping in the STP 3 & 4 design, none containing contaminated liquids is direct buried.
 4. The statement in item 3 above is applicable to liquid radwaste system piping.
 5. STP COLA Rev. 3, Part 2, Tier 2, Section 12.3 will be revised to include the following new supplemental Subsection 12.3.9. Gray highlighting indicates the changes.

12.3.9 Minimization of Contamination

The following site-specific supplement provides information to address 10 CFR 20.1406, as implemented by NEI 08-08:

As stated in Section 12.3 of the Design Control Document (DCD), The Advanced Boiling Water Reactor (ABWR) incorporates many Radiation Protection design features to limit contamination. Section 12.3 of the DCD is incorporated by reference and provides the features summarized below, among others:

- Pumps located in radiation areas are provided with flush lines and in certain cases chemical cleaning capabilities for use prior to maintenance. Pump casing drains provide a means for draining pumps to the sump prior to disassembly, thus reducing the exposure of personnel and decreasing the potential for contamination.
- Instrumentation lines in liquid service for systems containing radioactive fluids are provided with vent and backflush provisions. Reactor vessel sensing lines may be flushed with condensate following reactor blowdown.
- Heat exchangers are constructed of stainless steel or Cu/Ni tubes to minimize the possibility of failure. The heat exchanger design allows for complete draining of fluids from the exchanger, and connections are available for condensate or demineralized water flushing.
- Valves have back seats to minimize leakage through the packing. Teflon gaskets are not used.
- Piping was selected to provide a service life equivalent to the design life of the plant, with consideration given to corrosion allowances and environmental conditions. Piping

for systems containing radioactive fluids is welded to the most practical extent to reduce leakage through flanged or screwed connections.

- Floor drains with appropriately sloped floors are provided in shielded cubicles where the potential for spills exist. Smooth, epoxy-type coatings are employed to facilitate decontamination when a spill does occur. Curbs are provided to limit contamination and simplify washdown operations, and expanded metal-type floor gratings are minimized in favor of smooth surfaces in areas where radioactive spills could occur. Equipment and floor drain sumps are stainless steel lined to preclude leakage.
- Material selection consideration is used for systems and components exposed to reactor coolant. Specifically, a graded approach to the use of cobalt lowers the potential for the spread of contamination. Much of the cobalt is removed from contact with reactor coolant by eliminating Stellite where practical and reducing cobalt in the core stainless steel components.
- Sample stations in the plant contain flushing provisions using demineralized water, and sample station piping drains to plant sumps minimize the possibility of spills. Fume hoods are employed for airborne contamination control. Working areas and fume hoods are stainless steel to ease decontamination should a spill occur, and sample spouts are located above the sink to reduce the possibility of contaminating surrounding areas during the sampling process.
- HVAC systems are designed to limit the extent of airborne contamination by providing air flow patterns from areas of low contamination to more contaminated areas. HVAC Equipment drain sump vents are fitted with charcoal canisters or are piped directly to the Radwaste HVAC System to remove airborne contaminants evolved from discharges to the sump. HVAC penetrations through outer walls of buildings containing radioactive sources are sealed to prevent miscellaneous leaks into the environment.

Additionally, all below grade piping carrying radioactive fluids is located in tunnels. No direct buried piping containing radioactive fluids is incorporated in the STP 3 & 4 design.

Nuclear Energy Institute Report 08-08A, "Generic FSAR Template Guidance for Life Cycle Minimization of Contamination" provides the Minimization of Contamination Program for STP 3 & 4. This NEI template is incorporated by reference with the clarification that design changes for certified design materials are not required by implementation of this program. The evaluations, programs, and procedures required by NEI 08-08A will be issued six months prior to commencement of the Preoperational Test Program.

12.3.9.1 Operational Programs and Operating Procedures

Operational programs and operating procedures will be developed to address 10 CFR 20.1406, and will be issued six months prior to commencement of the Preoperational Test Program. These programs and procedures will include:

- Work practices, preventive maintenance, and procedures to minimize leaks and spills and provide containment and early and adequate detection including instruments for detection. This includes surveillance and monitoring.
- Surveillance and maintenance is performed to mitigate the consequences of undetected leakage over a long period of time.
- Operational practices will be documented such that they are subject to audit and inspection.
- Following construction, establishment of an onsite monitoring program as a part of the environmental monitoring program to prevent offsite migration of radionuclides via an unmonitored pathway.
- To facilitate decommissioning, maintain a system of records detailing contamination events and residual levels of environmental contaminants for the life of the facility, readily accessible to facilitate cleanup.
- Minimizing the generation of radioactive waste as a major operational consideration that will be addressed through careful work planning. Plant procedures will include provisions for proper packaging of wastes for transportation and acceptance by disposal or treatment facilities. Onsite storage is considered in certain circumstances as necessary.

Maintenance and other operating procedures are provided in Subsection 13.5.3.4.2, which includes plant radiation protection, chemical-radiochemical control, and radioactive waste management procedures. Subsection 13.5.3.4.3 lists radiation control procedures, including area radiation monitoring, process radiation monitoring, and meteorological monitoring procedures as well as procedures for discharge of effluents. Operational programs are listed in Table 13.4S-1, and included the Process and Effluent Monitoring and Sampling Program and Radiation Protection Program. 10 CFR 20.1406 requirements are considered in the development of these programs.

12.3.9.2 Design Provisions and Design Features

Design of structures, systems, and components, such as the following, outside the scope of ABWR DCD or departures from the DCD in COLA Part 2, Tier 2, are applicable to 10CFR20.1406 and RG 4.21.

- Section 12.3 describes facility radiation protection design features with STD DEP 12.3-4 adding ARMs and alarm capability.
- Section 12.5 provides supplemental information related to radiation protection facilities and equipment.

- Sections 11.5 and 12.0 describe process and effluent radiological monitoring systems with STD DEP 11.5-1 providing for equipment and instrumentation reliability improvements.
- Section 11.4 describes the solid waste management system and processes with STD DEP 11.4-1 to minimize the generation of waste.
- Section 11.3 describes the gaseous waste management system with STD DEP 11.3-1 providing for optimization.
- Section 11.2 describes the liquid radwaste management system with STD DEP 11.2-1 providing for equipment modernization.

12.3.10 References