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

August 20, 2009
U7-C-STP-NRC-090113

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 Requests for Additional Information

Attached are responses to NRC staff questions included in Request for Additional Information (RAI) letter number 145 related to Combined License Application (COLA) Part 2, Tier 2, Sections 12.2 and 12.5. This submittal completes the response to RAI letter 145. Attachments 1 through 6 contain responses to the RAI questions listed below:

12.02-4	12.05-2
12.02-5	12.05-3
12.02-6	12.05-4

The only commitment in this letter is enclosed as Attachment 2.

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

If you have any questions regarding these responses, please contact me at (361) 972-7136 or Bill Mookhoek at (361) 972-7274.

D091
NRO

STI 32523721

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

Executed on 8/20/09

Scott Head
Manager, Regulatory Affairs
South Texas Project Units 3 & 4

scs
Attachments:

1. Question 12.02-4
2. Commitment 09-12259-1
3. Question 12.02-5
4. Question 12.02-6
5. Question 12.05-2
6. Question 12.05-3
7. Question 12.05-4

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

Director, Office of New Reactors
U. S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

Kathy C. Perkins, RN, MBA
Assistant Commissioner
Division for Regulatory Services
Texas Department of State Health Services
P. O. Box 149347
Austin, Texas 78714-9347

Alice Hamilton Rogers, P.E.
Inspection Unit Manager
Texas Department of State Health Services
P. O. Box 149347
Austin, Texas 78714-9347

C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

*Steven P. Frantz, Esquire
A. H. Gutterman, Esquire
Morgan, Lewis & Bockius LLP
1111 Pennsylvania Ave. NW
Washington D.C. 20004

*George F. Wunder
* Michael Eudy
Two White Flint North
11545 Rockville Pike
Rockville, MD 20852

(electronic copy)

*George Wunder
*Michael Eudy
Loren R. Plisco
U. S. Nuclear Regulatory Commission

Steve Winn
Eddy Daniels
Joseph Kiwak
Nuclear Innovation North America

Jon C. Wood, Esquire
Cox Smith Matthews

J. J. Nesrsta
R. K. Temple
Kevin Pollo
L. D. Blaylock
CPS Energy

RAI 12.02-4:

QUESTION:

RG 1.206, Part C.I.12.2.1, Contained Sources, states that the applicant should describe the sources of radiation, during normal plant operations and accident conditions, that are the bases for the radiation protection design and that the sources should be described in the manner needed for input to the shield design calculation.

In accordance with RG 1.206, include radiation source information in FSAR Table 12.2-5a for the skid mounted Low Conductivity and High Conductivity Waste (LCW and HCW) filter/demineralizer systems that will be utilized in the STP 3 & 4 radwaste building.

RESPONSE:

The Liquid Radwaste Management System (LWMS) described in the DCD was replaced with a new design in the STP 3&4 COLA. As described in STD DEP 11.2-1 (COLA Part 7, Section 3.0), the filters and demineralizers in the DCD LWMS were replaced by modular processing units that will use technology improvements to improve treatment of radioactive waste water. The modular units are described as a mobile processing system since they are designed for ease of installation and replacement (i.e., skid mounted equipment is expected to be used). COLA Tier 2, Section 11.2.2 provides a description of typical components of the mobile processing system, but the final configuration of both the Low Conductivity Waste (LCW) subsystem and the High Conductivity Waste (HCW) subsystem will not be determined until the final equipment is procured. Each modular component is provided with shield walls that can be configured as necessary to minimize exposure to personnel during normal operation and routine maintenance (COLA Section 11.2.2.5.3).

Since the permanently installed filters and demineralizers in the DCD LWMS were replaced with modular, skid mounted components, the description of the LWMS radiation sources in COLA Section12.2 was updated. Specifically, the LCW and HCW filters and demineralizers in Table 12.2-5a were removed and replaced by two components: the LCW and HCW Filter/Demin Skids. Since the final configuration of these components is not known at this time, the information on the geometry of the sources in Table 12.2-5a was removed and replaced with a footnote indicating the information would be provided by the vendor. Similar changes were made to Tables 12.2-5b and 12.2-5c. Also, the tables containing the activity inventories for the filters and demineralizers (Tables 12.2-13b, 12.2-13c and 12.2-13f) were removed from the COLA. These changes reflected the philosophy that the modular components will be procured in the future to ensure the best available technology is used. The procurement process will ensure that the shielding provided with the modular components ensures that exposures to personnel are ALARA. The acceptance criteria for the shielding are contained on the radiation zone maps (COLA Figure 12.3). Compliance with these acceptance criteria is confirmed through the ITAAC contained in the COLA Tier 1, Section 3.2, Table 3.2a, Design Commitment 1.

This RAI specifically requests that the information needed for input to shield design calculations for the new modular components be placed in the COLA. To provide this information it will be necessary to develop and analyze a "typical" filter/demin skid. This will allow the specification of source geometry, activity inventory and required shielding to maintain exposures to personnel ALARA for the "typical" modular component. Since developing this information will require additional analysis, this is considered an interim response. A supplemental response with the requested information will be provided by October 12, 2009 (09-12259-1), as indicated in Attachment 2.

No COLA revisions are required as a result of this interim response.

Commitment Number	Commitment Statement	Due Date
09-12259-1	Provide a supplementary response to NRC RAI 12.02-4 following completion of calculations to determine mobile filter/demineralizer source term.	October 12, 2009

RAI 12.02-5

QUESTION:

RG 1.206, Part C.I.12.2.1, Contained Sources, states that the applicant should describe the sources of radiation, during normal plant operations and accident conditions, that are the bases for the radiation protection design and that the sources should be described in the manner needed for input to the shield design calculation.

Radiation source information contained in Section 12.2 of the STP 3 & 4 FSAR appears to be incomplete in several areas.

Given that Table 12.2-5a of the STP 3 & 4 FSAR contains no radiation source information for the proposed skid mounted LCW and HCW filter/demineralizer systems, provide information concerning how the associated dose rates, shield design, and radiation zone maps for the radwaste building were developed.

RESPONSE:

Section 12.3.2 of the ABWR DCD states that shielding for systems containing radioactivity is based on access and exposure requirements of surrounding areas. Radiation zones are established in all areas of the plant based on access requirements and radiation sources in the area in accordance with the zone designations provided in ABWR DCD Section 12.3.1.3. The radiation zones for the equipment bay area are shown in COLA Figure 12.3-39. There are two radiation zones in the vicinity of the Liquid Waste Management System (LWMS) modular equipment.

- The areas designated "LWR System Skids" correspond to the areas inside the shielded enclosures associated with the modular components of the LWMS. Since it is anticipated that there will be unshielded radiation sources in these areas, they are designated Radiation Zone F, which indicates a dose rate greater than 1000 μSv/hr (100 mrem/hr), or a high radiation area.

- The open areas in the equipment bay, including the areas adjacent to the modular equipment enclosures, are designated Radiation Zone C. which indicates a maximum dose rate of 50 μSv/hr (5 mrem/hr). Although access to the area is controlled for the purpose of radiation protection, the dose rate in zone C is low enough so the area would not be designated a radiation area.

The radiation zones for the equipment bay were developed to ensure routine access to equipment bay would be possible during operation of the mobile systems and to indicate that the modular components may not be accessible while they are operating. This is expected to require that modular components, when they are procured, will be provided with radiation shielding. The shielding will be designed to meet the acceptance criteria contained on the radiation zone maps.

Compliance with these acceptance criteria is confirmed through the ITAAC contained in the COLA Tier 1, Section 3.2, Table 3.2a, Design Commitment 1.

No COLA revisions are required as a result of this response.

RAI 12.02-6

QUESTION:

RG 1.206, Part C.I.12.2.1 states that the applicant describe any required radiation sources containing byproduct, source, and special nuclear material that may warrant shielding design consideration and provide a listing of isotope, quantity, form, and use of all sources that exceed 3.7 E+9 Bq (100 millicuries).

In accordance with RG 1.206, provide information about, and include a list of radiation sources containing byproduct, source, and special nuclear material in FSAR Section 12.2 including isotope, quantity, form, and use of all sources that exceed 3.7 E+9 Bq (100 millicuries).

RESPONSE:

STP 3&4 COLA Rev. 2 incorporates by reference ABWR DCD subsection 12.2.1.2.9, "Other Radioactive Sources". For example, subsection 12.2.1.2.9.1 states that the reactor startup source is shipped to the site in a special cask designed with shielding. The source is transferred under water while in the cask and loaded into beryllium containers. This is then loaded into the reactor while remaining under water. The source remains within the reactor for its lifetime. Thus, no unique shielding requirements are required after reactor operation. There are no additional contained radiation sources other than those identified in the COLA Section 12.2 tables.

There is no COLA revision necessary as a result of this RAI.

RAI 12.05-2:

QUESTION:

The applicant has not addressed this operational program directly; however STP COL FSAR Supplement 12.5S, "Operational Radiation Protection Program" discusses items related to this operational program. In this supplement the applicant incorporates by reference, with site specific supplements, NEI 07-03, "Generic FSAR Template Guidance for Radiation Protection Program Description," which is currently under review by the NRC staff. The applicant indicates that in the STP COL FSAR, Table 13.4S-1 provides milestones for radiation protection program implementation. The description of the operational program and proposed implementation milestone for the radiation protection program is reviewed in accordance with 10 CFR 20.1101. Its implementation is required by a license condition. The applicant has not described the radiation protection procedures/programs to be implemented at each phase of the operational program implementation in accordance with Table 13.4S-1. Please provide a description of the program aspects to be implemented prior to each milestone

RESPONSE:

Section 12.5S of the STP 3 & 4 COLA incorporates the guidance in NEI 07-03 by reference. It is understood that the staff has accepted this NEI template and it now exists as NEI 07-03A. As per the response to RAI 12.05-4, Section 12.5S of the COLA will be revised to incorporate the accepted template. South Texas 3 & 4 will follow the guidance listed in NEI 07-03A in implementing its Radiation Protection program. The procedures and programs given in Section 12.5 for the milestones listed in COL FSAR Table 13.4S-1 will be in place prior to the milestone(s).

No revision to the COLA is required as a result of this response.

RAI 12.05-3

QUESTION:

The applicant has not described the radiation protection procedures to be implemented at each phase of the operational program implementation in accordance with Table 13.4S-1 in the STP COL FSAR. Sections 12.5 and 12.5S of the STP 3 & 4 FSAR do not list or identify the milestones and do not provide sufficient detail to allow for a determination of whether adequate procedures will be implemented prior to each milestone. Please describe the procedures to be implemented prior to each milestone.

RESPONSE:

NEI 07-03A, "Generic FSAR Template Guidance for a Radiation Protection Program Description", Section 12.5, addresses the procedures required to be in place prior to initial receipt of by-product, source, or special nuclear materials, prior to receiving reactor fuel and thereafter when fuel is possessed under the license, prior to initial fuel load, and prior to initial transfer, transport, or disposal of radioactive materials.

The STP 3 & 4 COLA, Section 12.5S, states that the guidance in NEI 07-03A is incorporated by reference, as stated in the response to NRC question 12.05-4. The Radiation Protection program at STP Units 3 & 4 will have the required procedures in place prior to the four milestones listed above, as per Section 12.5 of NEI 07-03A.

No revision to the COLA is required as a result of this response.

RAI 12.05-4

QUESTION:

The applicant's FSAR, Section 12.5S, includes a commitment to use the guidance of NEI 07-03, "Generic FSAR Template Guidance for a Radiation Protection Program Description", which is currently under NRC staff review. This NEI template includes the Radiation Protection Program Description as well as program implementation milestones for specific portions of the program. Should the staff accept NEI Template 07-03, please update the final version of this template (or otherwise update the FSAR to address any differences for consistency with an approved template). Accordingly, the applicant should update all internal citations to an approved template in applicable FSAR subsections and references.

RESPONSE:

Section 12.5S of the STP 3 & 4 COLA incorporates the guidance in NEI 07-03 by reference. It is understood that the staff has accepted this NEI template and it now exists as NEI 07-03A. Section 12.5S of the COLA will be revised as shown below:

12.5S Operational Radiation Protection Program

Nuclear Energy Institute Report No. NEI 07-03A, "Generic FSAR Template Guidance for Radiation Protection Program Description" provides the Operational Radiation Protection Program for STP 3 & 4. This NEI template is incorporated by reference with the following site-specific supplements. The NEI template material is shown in italics.