November 24, 2009
U7-C-STP-NRC-090211

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 August 26, 2009,
               U7-C-STP-NRC-090115 (ML092430075)

Attached are responses to NRC staff questions included in Request for Additional Information
(RAI) letter number 182 related to Combined License Application (COLA) Part 2, Tier 2,
Chapter 14, Initial Test Program.

Attachment 1 supplements STPNOC's response to RAI 14.02-10 as provided in the referenced
letter. Attachment 2 revises our response to RAI 14.02-11 and replaces the one provided in the
referenced letter in its entirety.

The COLA changes provided in this response will be incorporated in 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.

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

Executed on **11/24/09**

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

jwc

Attachments:
1. 14.02-10 Supplement 1
2. 14.02-11 Revision

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

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RAI 14.02-10 Supplement 1

QUESTION:

Tier 1 departure STD DEP T1 3.4-1 provides the basis for changes made to FSAR Sections 14.2.12.1.11, 14.2.12.2.7, 14.2.12.2.16 and Table 14.2-1. However, not all of the changes made were specifically described in the Departures Report (Part 7 of the COLA). For example, the change in nomenclature from the "Process Computer System" (PCS) to the "Plant Information and Control System" (PCIS) was not included. Please update the departures report to include these changes.

SUPPLEMENTAL RESPONSE:

The following information supplements the response submitted as Attachment 2 to the letter from Scott Head to Document Control Desk, "Response to Request for Additional Information," dated August 26, 2009, U7-C-STP-NRC-090115 (ML092430075).

As requested by the NRC Staff, STPNOC's response to RAI 14.2-10 provided an update to STD DEP T1 3.4-1 to change the nomenclature for Process Computer System to Plant Computer Function. Subsequent to the response to RAIs 14.02-10 and also 14.02-11, the NRC Staff requested supplemental information to further clarify the distinction between Plant Computer Function (PCF) and Plant Information and Control System (PICS). Therefore, STPNOC will revise STP 3&4 COLA Part 2, Tier 2, by adding new Subsection 7.1S.3 to FSAR, Section 7.1S. Additionally, references to the PICS are removed from COLA Part 2, Tier 1, Subsection 2.2.11 and Tier 2, Section 14.2 because the PICS is detailed design information that is not part of STD DEP T1 3.4-1.

To provide clarification, the following changes to STP 3&4 COLA Part 2, Tier 1 and Tier 2, are shown below. Gray highlighting indicates the changes based on COLA Revision 3.

7.1S Site Specific Instrumentation and Control Systems and Platforms

This site specific supplemental section provides platform information for safety-related and nonsafety-related instrumentation and control (I&C) systems and platforms.

7.1S.3 Plant Information and Control System (Non-Safety)

The Plant Information and Control System (PICS) provides integrated process control, monitoring, and human-system interface functions for the nonsafety-related plant process systems. PICS includes computer workstations for the human interface and data processing, controllers and servers for the process control functions, and a real-time communications network to share data between the different controller and computer processors. Typical data communication interfaces to PICS are illustrated in Figure 7.9S-1.

The Plant Computer Functions (PCFs) are a set of functions that were provided by the Process Computer System (PCS) in the original ABWR DCD design. The STP 3&4 design does not have a PCS. These PCFs are a subset of PICS and include data display and alarms, plant computer calculations (e.g., Power Generation Control System (PGCS)) and data recording (logging) (see Subsections 7.7.1.5, 7.7.2.5 and 7.7.1.2.2 (6)), and historical archiving (including Sequence of Events). The PCFs have not changed from those of the ABWR DCD Process Computer System.

The PICS is configured as a distributed control system (DCS). Therefore, PICS, as a DCS, is an integrated set of control processors, servers, workstations, and applications that provide plant wide process control and monitoring. PICS also acts as the supervisory control system and provides the primary interface between the control room operators and the plant process and equipment data and control capabilities. Several computer processors are linked together via a real-time communications network, sharing the computer processing tasks.

Each computer processor transmits and receives data from the communications network. Each device in the network receives the same data at essentially the same time, creating a network database that is shared by each of the computer processors.

PICS has the following major elements:

- Control processors and servers
- Workstations
- Network Communications
- Input/Output Modules
- Video Display Units

The following changes will be made to COLA Part 2, Tier 1, Section 2.2.

2.2.11 ~~Process Computer System~~ <u>Plant Computer Functions (PCFs)</u>

STD DEP T1 3.4-1

Design Description

The ~~Process~~ <u>Plant</u> *Computer ~~System~~* <u>Functions</u> *(~~PCS~~ <u>PCFs</u>) ~~consists of~~* <u>are a set of control, monitoring and data calculation functions that are implemented on</u> *redundant digital* ~~central~~<u>processing units and associated peripheral equipment</u> ~~provided by the Plant Information and Control System (PICS)~~. <u>Redundant processors are used for functions that are important to plant operation. The PCFs</u> *~~and is~~* <u>are</u> *classified as* ~~a~~ *nonsafety-related* ~~system~~.

Table 2.2.11 ~~Process Computer System~~ Plant Computer Functions

| Inspections, Tests, Analyses and Acceptance Criteria | | |
Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The PICS equipment ~~comprising~~ **performing** the ~~PCS~~ **PCFs** is defined in Section 2.2.11.	1. Inspections of the as-built system will be conducted.	1. The as-built ~~PCS~~ **PICS equipment implementing the PCFs** conforms with the description in Section 2.2.11.
2. The ~~PCS~~ **PCFs** ~~provides~~ **provide** LPRM calibration and fuel operating thermal limits data to the ATLM function of the RCIS.	2. Tests of the as-built ~~PCS~~ **PCFs** will be conducted using simulated plant input signals.	2. LPRM calibration and fuel thermal limits data are received by the ATLM function of the RCIS.
3. In the event that abnormal conditions develop in the plant during operations in the automatic mode, the ~~PCS~~ **PCFs** automatically ~~reverts~~ **revert** to the manual operating mode.	3. Tests of the as-built ~~PCS~~ **PCFs** will be conducted using simulated abnormal plant input signals, while the ~~PCS~~ **PCFs** ~~is~~ **are** in the automatic operating mode.	3. Upon receipt of the abnormal plant input signals, the ~~PCS~~ **PCFs** automatically ~~reverts~~ **revert** to the manual operating mode.

The following changes will be made to the FSAR, Section 14.2.

14.2.12.1.3 Recirculation Flow Control System Preoperational Test

STD DEP T1 3.4-1

    (2)   Prerequisites

    The construction tests have been successfully completed, and the SCG has reviewed the test procedure and approved the initiation of testing. The following systems and functions shall be available, as needed, to support the specified testing and the corresponding system configurations: Reactor Recirculation System, Feedwater Control System, Steam Bypass and Pressure Control System, Electric Power Distribution System/instrumentation and control power supply, ~~Process Computer~~ Plant ~~Information and Control System,~~ Plant Computer Functions, Reactor Water Cleanup System, CRD System, RCIS, Neutron Monitoring System, Automatic Power Regulator System, Condensate and Feedwater System and Reactor Protection System.

14.2.12.1.4 Feedwater Control System Preoperational Test

    (2)   Prerequisites

    Appropriate instrumentation and control power supply, Turbine Control System, Reactor Recirculation Flow Control System, Condensate and Feedwater System, ~~Process Computer~~ Plant Information and Control ~~System,~~ Plant Computer Functions, Reactor Water Cleanup System, RCIC System, and Nuclear Boiler System ~~and Multiplexing System~~ shall be available and operational to support the performance of this test.

14.2.12.1.8 Residual Heat Removal Preoperational Test

    (2)   Prerequisites

    Reactor Building Cooling Water System, Instrument Air System, Fuel Pool Cooling and Cleanup System, Leak Detection System, RCIC System, Suppression Pool Water System, Nuclear Boiler System, ~~Process Computer System,~~ Electric Power Distribution System, ~~Process Computer Plant Information and Control System~~ Plant Computer Functions, and other required interfacing systems shall be available, as needed, to support the specified testing and the appropriate system configurations.

14.2.12.1.11 Safety System Logic and Control Preoperational Test

STD DEP T1 3.4-1

    (2)   Prerequisites

The process computer Plant Information and Control System Plant Computer Functions shall be available for displaying and logging, as required, the SSLC supplied parameters and fault identification and bypass status signals. Additionally, a dedicated diagnostic instrument surveillance test controller (STC) equipment shall be available and used as an aid in performing SSLC functional logic testing, including trip, initiation, and interlock logic.

14.2.12.1.16 *Process Computer* Plant Information and Control System Plant Computer Functions Preoperational Test

STD DEP T1 3.4-1

 (1) Purpose

  To verify the proper operation of the Process Computer Plant Information and Control System (PICS) Plant Computer Functions (PCFs), including the Performance Monitoring and Control System (PMCS) and the Power Generation Control System (PGCS) and their related functions.

 (3) General Test Methods and Acceptance Criteria

  Proper performance of system hardware and software will be verified by a series of individual and integral tests. These tests shall demonstrate that the PICS PCFs, including PMCS and PGCS, operates properly as specified in Subsection 7.7.1.5 and applicable PICS PCFs design specifications through the following testing:

14.2.12.1.17 Automatic Power Regulator Preoperational Test

 (2) Prerequisites

  The Process Computer Plant Information and Control System PCFs, RCIS, RFC System, Turbine Control System, SB&PC System, and other required system interfaces shall be available to support the specified system testing.

14.2.12.2.7 *Process Computer* Plant Information and Control System Plant Computer Functions Operation

 (1) Purpose

  To verify the ability of the Process Computer Plant Information and Control System (PICS) Plant Computer Functions (PCFs) to collect, process, and display plant data, execute plant performance calculations, and interface with various plant control systems during actual plant operating conditions.

 (3) Description

  During plant heatup and the ascension to rated power, the various process variables that are monitored by the PICS PCFs and required by the reactor core performance and plant performance calculations begin to enter their

respective ranges for normal plant operation. During this time, it will be verified that the ~~PICS~~ PCFs correctly receives, validates, processes, and displays the applicable plant information. Recording and playback features will also be tested. Data manipulation and plant performance calculations using actual plant inputs will be verified for accuracy, using independent calculations for comparison. Also, the ability of the ~~PICS~~ PCFs to interface correctly with other plant control systems during operation will be demonstrated.

14.2.12.2.16 Plant Automation and Control

STD DEP T1 3.4-1

(2) Prerequisites

Additionally, affected systems and equipment, including lower level control systems such as RCIS, recirc flow control, feedwater control and turbine control, as well as monitoring and predicting functions of the ~~plant process computer and/or automation computer~~ PICS PCFs, shall have been adequately tested under actual operating conditions.

Table 14.2-1 Startup Test Matrix

Testing Plateau						
Power Ascension Test	OV	HU	LP	MP	HP	Notes
Control Rod Drive System Performance: *Friction Testing*	✔	~~✔~~				~~HU – 4 selected rods at rated pressure~~
~~*Process Computer*~~ Plant Information and Control System *Plant Computer Functions Operation:* *NSS/BOP Monitoring Programs*		✔	✔	✔	✔	

RAI 14.02-11 Revision 1

QUESTION:

FSAR sub-sections 14.2.12.1.16 and 14.2.12.1.17 have been modified but do not cite the departure(s) number associated with the proposed changes. The staff requests that STPNOC cite the appropriate departures for these changes.

REVISED RESPONSE:

The following information replaces in its entirety the response submitted as Attachment 3 to the letter from Scott Head to Document Control Desk, "Response to Request for Additional Information," dated August 26, 2009, U7-C-STP-NRC-090115 (ML092430075).

The convention used in the STP 3&4 FSAR is that all changes below a cited departure are associated with that departure until another departure is listed. In this case, STD DEP T1 3.4-1, which is cited above Subsection 14.2.12.1.14, is also applicable to Subsections 14.2.12.1.16 and 14.2.12.1.17.

No COLA revision is required as a result of this RAI.