Nuclear Operating Company

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

September 8, 2009
U7-C-STP-NRC-090131

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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Rockville MD 20852-2738

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

Attached are the responses to the NRC staff questions included in Request for Additional Information (RAI) letter numbers 129, 212 and 215, related to Combined License Application (COLA) Part 2, Tier 2, Chapters 8, Electric Power, 14, Initial Test Program and 16, Technical Specifications. This submittal completes the response to RAI letter numbers 129 and 212.

The four (4) attachments provide the responses to the RAI questions listed below:

RAI 08.03.01-4, Supplement 1
RAI 14.02-12
RAI 16-52
RAI 16-53

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, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

STI 32530106

D091
NRO

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

Executed on 9/8/09

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

gsc

Attachments:

1. RAI 08.03.01-4, Supplement 1
2. RAI 14.02-12
3. RAI 16-52
4. RAI 16-53

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

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RAI 08.03.01-4, Supplemental Response

Supplemental Response:

STP Letter U7-C-STP-NRC-090071 (ML092190534), dated July 22, 2009, provided the response to RAI question 08.03.01-4, which included changes to STP COLA Part 2, Tier 2, Chapters 7 and 8 that reduced the number of non-Class 1E buses between the UATs and RAT A and the Class 1E buses. The response to RAI question 08.03.01-4 stated that "FSAR Figure 8.3-1, Sheet 1, Figure 8.21 Sheet 1, and Figure 7.4-2 will also change as a result of the stub bus removal." This supplemental response provides FSAR Figure 8.3-1, Sheet 1, and FSAR Figure 7.4-2. Figure 8.2-1, Sheet 1, "Power Distribution Routing Diagram," is a plant layout drawing that will be provided in a future update to the COLA.

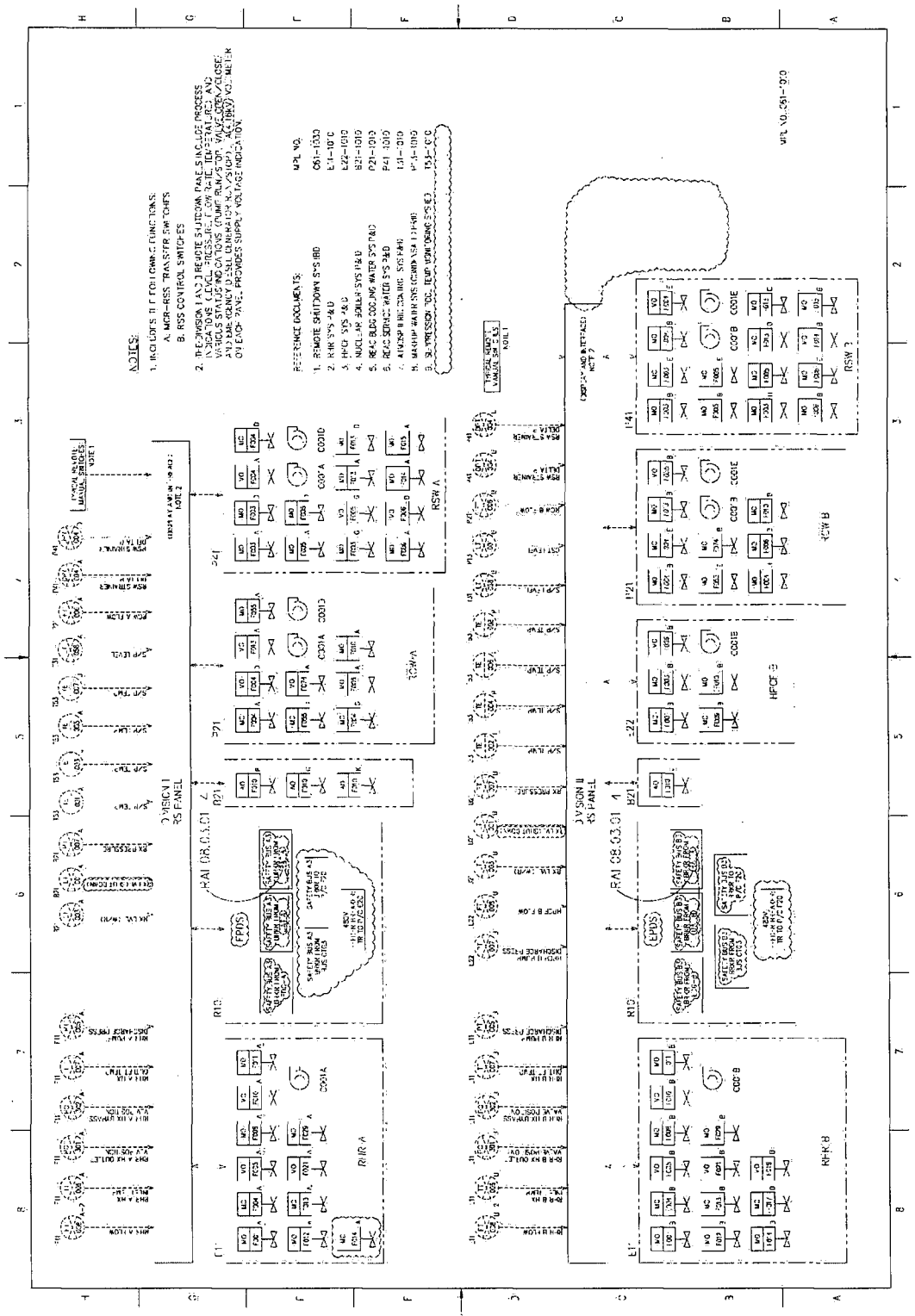


FIGURE 7.4-2 REMOTE SHUTDOWN SYSTEM (SHEET 1 OF 1)
STP 3&4
Rev 2

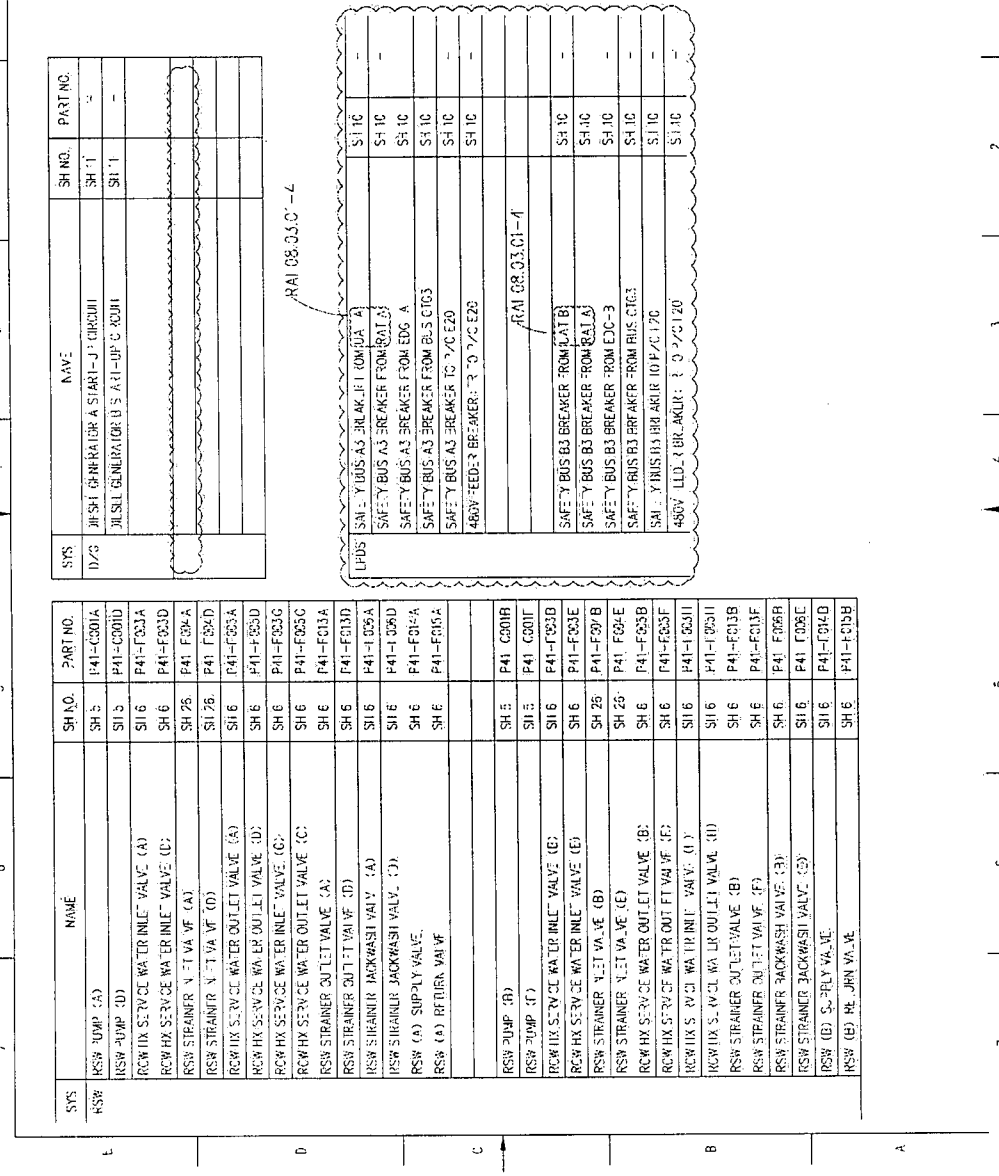
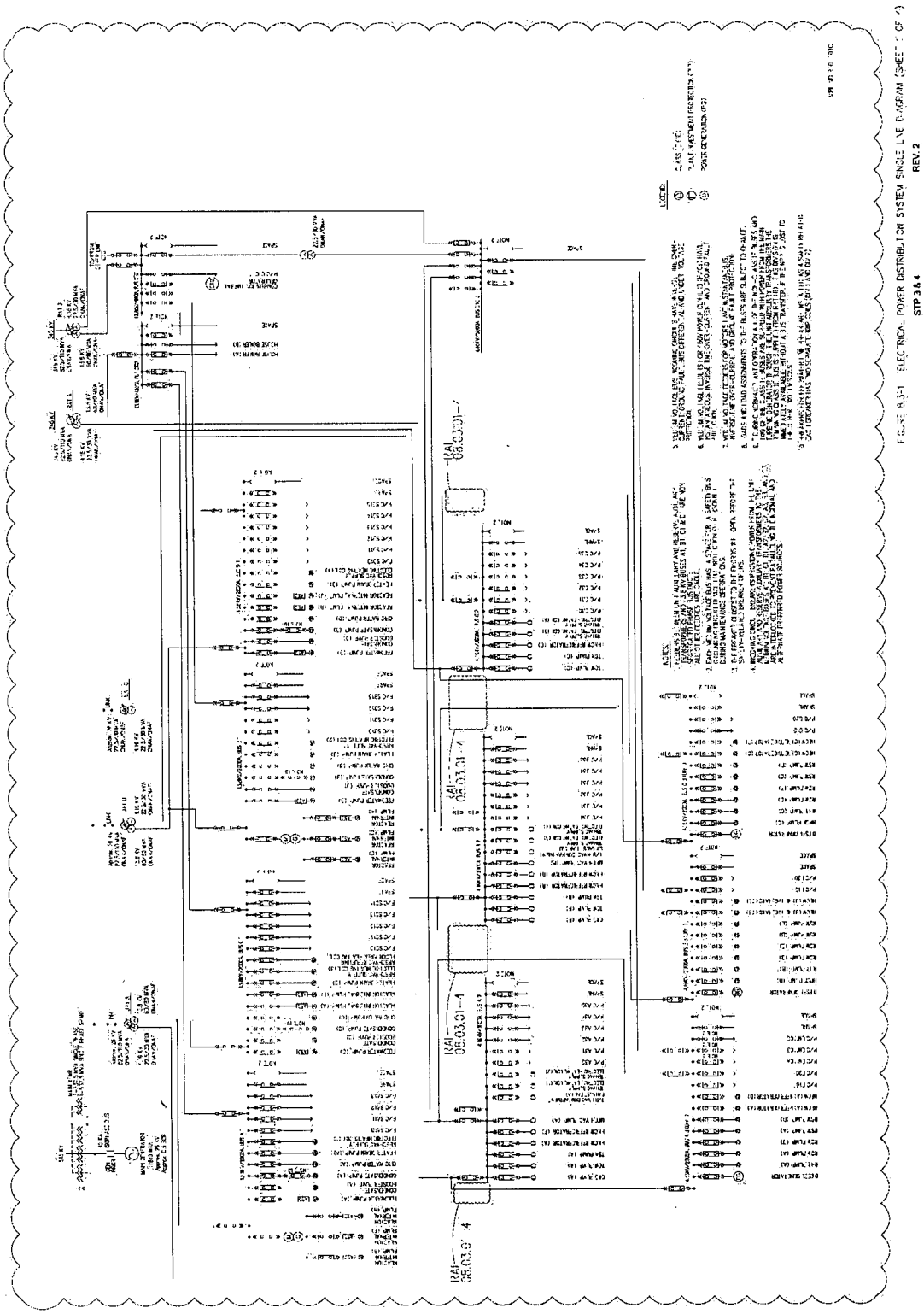


FIGURE 7.4-3 REMOTE SHUTDOWN SYSTEM (SHEET 3 OF 27)
STP 3&4



RAI 14.02-12

QUESTION:

In FSAR Subsection 14.2.12.2.5, the COL applicant deleted the friction testing requirement for the CRD system because a new position and monitoring system is used to monitor the CRD system. The staff found that STD DEP 14.2-1 is a departure to a first-of-a-kind (FOAK) test for the CRD System. For a FOAK test, RG 1.206, Regulatory Position C.I.14.2.8, "Utilization of Reactor Operating and Test Experiences in Test Program Development," states, "the COL applicant should also include the justification for not including preoperational and/or startup testing for any unique or first-of-a-kind design features." NUREG-0800, SRP 14.2, Acceptance Criteria 5.C, also states "for new, unique, first-of-a-kind design features used in the facility, the functional testing requirements and acceptance criteria necessary to verify their performance should be submitted for review and approval."

The COL applicant did not provide any details on how this new FOAK system accomplishes the friction testing function. Consistent with RG 1.206, Regulatory Position C.I.14.2.8 and SRP 14.2, Acceptance Criteria 5.C, please provide details on how the new position and monitoring system fulfils the test requirement for detecting CRD friction problems during CR insertion or withdrawal or justify an alternative.

RESPONSE:

STD DEP 14.2-1, Control Rod Drive Friction Testing Requirements, is a departure from the first-of-a-kind (FOAK) test as described in the DCD which is a modification to the test. At the time the DCD was developed and approved, the ABWR CRD system with the fine motion control rod drive (FMCRD) was considered a FOAK system; however, since then there are three operating ABWRs using this system. Based on this operating experience, the need for the portion of the CRD friction test related to testing a few selected CRDs at rated temperature and pressure has been determined to be unnecessary.

The purpose of this test is to assure that excessive friction does not occur in the CRDs, as such friction could result in separation of the control rod from the drive mechanism, which has the potential to lead to a rod drop accident. Friction testing is still performed as part of the Control Rod Drive System Preoperational Test described in FSAR Subsection 14.2.12.1.6, during Startup Testing as described in FSAR Subsection 14.2.12.2.5(3) and Table 14.2-1, and as required during plant operation, to assure there are no significant issues that could lead to binding. As explained in COLA Part 7 for this departure, deletion of this part of CRD friction testing is further justified by the fact that the ABWR employs a design in which normal rod positioning is accomplished by an electric motor, rather than by hydraulic pressure. Thus the additional friction testing during initial heatup is of minimal value. Mechanical binding (friction) of an ABWR CRD will result in hollow piston separation from the ball nut (for CRD withdrawal), which would be detected by existing permanently installed Class 1E instrumentation (SIP – Separation

Indicator Probe – a special feature of the FMCRD). This instrumentation is described in FSAR Subsections 4.6.1.1, 4.6.1.2.2.6, and 4.6.3.4, and shown on Figure 4.6-4, which are incorporated by reference from the ABWR DCD with no departures. As described in the ABWR Final Safety Evaluation Report (FSER) NUREG-1503 Section 15.3 (4), "In contrast to the locking piston CRD, the FMCRD is designed to detect the separation of the control rod from the drive mechanism. Two redundant and separate Class 1E switches are provided to detect the separation of either the control rod from the hollow piston or the hollow piston from the ball nut. Actuation of either of these switches cause an immediate rod block and initiates an alarm in the control room, thereby reducing the probability of a rod drop accident from occurring."

For the reasons discussed above, adequate justification exists as noted in RG 1.206, Regulatory Position C.I.14.2.8, for this change to the CRD friction testing.

To clarify the basis of this change, COLA Part 7 Section 3.0 will be revised as shown below. Changes to COLA R2 are indicated in gray shading.

STD DEP 14.2-1, Control Rod Drive Friction Testing Requirement

Description

The DCD Subsection 14.2.12 requirement for performing control rod drive (CRD) friction testing is modified to remove the portion of the test that is performed on selected rods at rated temperature and pressure ~~is deleted~~. CRD friction testing is a traditional requirement performed on older BWR designs with CRDs positioned using hydraulic pressure. The ABWR employs a design in which normal rod positioning is accomplished by an electric motor. Mechanical binding (friction) of an ABWR CRD will result in blade separation from the ball nut which would be detected by existing permanently installed Class 1E instrumentation. Thus ABWR CRDs are easily monitored for performance degradation during normal CRD withdrawal and ~~periodic~~ the portion of the startup friction testing performed on selected rods at rated temperature and pressure is not required.

RAI 16-52

QUESTION:

The applicant is requested to revise the bases for Required Actions D.1 and D.2 of PTS 3.8.4 to be consistent with GTS and PTS 3.8.4 Condition D. In STD DEP 16.3-42, the applicant proposed to make the bases for Required Actions D.1 and D.2 of PTS 3.8.4, DC Sources – Operating," consistent with Condition D, which states, "Required Action and associated Completion Time not met," by removing the GTS bases phrase "for Required Actions A.1, B.2, C.1, and C.2." However, this change does not fully correct the bases so that they are consistent with Condition D. This is because the bases phrase "If all inoperable DC electrical power subsystems cannot be restored to OPERABLE status within the associated Completion Times" would not apply to all of the Required Actions in Condition A. The response to this question should include revising the discussion of STD DEP 16.3-42 in Part 7 of the application.

RESPONSE:

Standard Departure 16.3-42 will be deleted and the text in Bases 3.8.4, ACTIONS D.1 and D.2 will be restored to the DCD language, requiring shutdown only for Required Actions A.1, B.2, C.1 and C.2 not met within their associated Completion Times.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources – Operating

BASES

The information in this section of the reference ABWR DCD, including all subsections, is incorporated by reference with the following departures.

STD DEP T1 3.4-1
~~STD DEP 16.3-42~~

STD DEP T1 3.4-1

ACTIONS *B.1 and B.2*

In Condition B, Division IV DC electrical power subsystem is inoperable. Required Actions B.1 allows 2 hours to declare affected required features inoperable so that appropriate actions are implemented in accordance with the affected required features of the LCOs' ACTIONS. Division IV is less critical than the other three DC electrical power subsystems because of its limited role in actuating safety related functions (i.e., ~~Essential Multiplex System~~ Data Communication Function *Div. IV, SSLC Div. IV sensor logic). Division IV does not feed or control any major mechanical components or systems.*

~~STD DEP 16.3-42~~ *D.1 and D.2*

If all inoperable DC electrical power subsystems cannot be restored to OPERABLE status within the associated Completion Times ~~for Required Actions A.1, B.2, and C.1 or C.2,~~ for Required Actions A.1, B.2, and C.1 or C.2, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 12 hours and to MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 4 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

COLA Part 7, Section 2.2.2

~~STD DEP 16.3-42, LCO 3.8.4, DC Sources - Operating~~

~~The Bases of Required Action D.1 and D.2 states that "If all inoperable DC electrical power subsystems cannot be restored to OPERABLE status within the associated Completion Times for Required Action A.1, B.2, and C.1 or C.2, the unit must be brought to a MODE in which the LCO does not apply." This sentence has been changed to "If all inoperable DC electrical power subsystems cannot be restored to OPERABLE status within the associated Completion Times, the unit must be brought to a MODE in which the LCO does not apply." This change is made to be consistent with the Required Action.~~

RAI 16-53

QUESTION:

In STD DEP 16.3-23. the applicant-recommended correction to the title of Technical Specification LCO 3.3.1.2 in BASES 16.3.10.5 is incorrect. The title should be corrected to "Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) Actuation."

The applicant is requested to change two references in the LCO section of the bases for GTS 3.10.5 from LCO 3.3.1.1, "SSLC Instrumentation," to LCO 3.3.1.1, "Safety System Logic and Control (SSLC) Sensor Instrumentation;" and LCO 3.3.1.2, "Reactor Protection System (RPS) and MSIV Trip Actuation Logic" to 3.3.1.2, "Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) Actuation."

RESPONSE:

The LCO section of the bases for GTS 3.10.5 will be revised to correctly reference LCO 3.3.1.1, "Safety System Logic and Control (SSLC) Sensor Instrumentation" and LCO 3.3.1.2, "Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) Actuation."

COLA Part 4 will be revised accordingly. COLA Part 7, Section 2.2, STD DEP 16.3-23 was revised correctly in response to RAI 16.44 as shown below.

CRD Removal – Refueling

B 3.10.5

STD DEP 16.3-23
LCO

As described in LCO 3.0.7, compliance with this Special Operations LCO is optional. Operation in MODE 5 with any of the following LCOs – LCO 3.3.1.1, "Safety System Logic and Control (SSLC) Sensor Instrumentation," LCO 3.3.1.2, "Reactor Protection System (RPS) and Main Steam Isolation Valve (MSIV) ~~Trip~~ Actuation ~~Logic~~," LCO 3.3.8.1, "~~Vital AC~~ Electric Power Monitoring," LCO 3.9.1, LCO 3.9.2, LCO 3.9.4, or LCO 3.9.5 – not met can be performed in accordance with the Required Actions of these LCOs without meeting this Special Operations LCO or its ACTIONS.

However, if a single CRD or CRD drive pair removal from a core cell containing one or more fuel assemblies is desired in MODE 5, controls consistent with those required by LCO 3.3.1.1, LCO 3.3.1.2, LCO 3.3.8. 21, LCO 3.9.1, LCO 3.9.2, LCO 3.9.4, and LCO 3.9.5 must be implemented and this Special Operations LCO applied.

COLA Part 7, Section 2.2.2

STD DEP 16.3-23, LCO 3.10.5, Control Rod Drive (CRD) Removal - Refueling

The APPLICABILITY and LCO sections of the Bases refer to LCO 3.3.8.2 instead of to the correct LCO 3.3.8.1. ~~It~~ The LCO section of the Bases also ~~does not utilize the correct~~ contains incorrect references to the Specification Titles for LCOs 3.3.1.1, 3.3.1.2 and 3.3.8.1. ~~In addition, the Applicability section of the Bases also refers to LCO 3.3.8.2 instead of LCO 3.3.8.1.~~ These ~~referential~~ LCO number and title changes have been corrected ~~made~~.