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

October 19, 2010
NOC-AE-10002609
File No.: G25
10 CFR 50.73
STI: 32767069

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2738

South Texas Project
Unit 1
Docket No. STN 50-498
Licensee Event Report 1-2010-003:
Unit 1 Reactor Trip During Surveillance Testing

Pursuant to 10 CFR 50.73, the STP Nuclear Operating Company (STPNOC) submits the attached Unit 1 Licensee Event Report (LER) 1-2010-003 to address the Unit 1 Reactor trip during the performance of a scheduled surveillance test of the Solid State Protection System (SSPS).

This condition is considered reportable under 10CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section.

This event did not have an adverse effect on the health and safety of the public.

There are no commitments contained in this LER. Corrective actions will be implemented in accordance with the STP Corrective Action Program.

If there are any questions on this submittal, please contact either J. A. Loya at (361) 972-8005 or me at (361) 972-7158.

L. W. Peter
Plant General Manager

JAL

Attachment: LER 1-2010-003: Unit 1 Reactor Tripped During Surveillance Testing

IE22
NRR

cc:
(paper copy)

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NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

UNIT 1 REACTOR TRIP DURING SURVEILLANCE TESTING

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
08	20	10	2010	- 003 -	0	10	19	2010	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE

1

10. POWER LEVEL

100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☐ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☒ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Joe Loya, Staff Licensing Engineer	361-972-8005

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
NA									

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* x NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On August 20, 2010 at 1525 hours, the Unit 1 Reactor automatically tripped during the performance of a scheduled surveillance test of the Solid State Protection System (SSPS). The reactor trip was caused by a human performance error that occurred when the procedure performer and verifier missed a procedure step.

The Root Cause for the reactor trip was determined to be:

1. Procedure place keeping standards for the site were less than adequate and
2. Supervisory Oversight of surveillance test procedure 0PSP03-SP-0006R became ineffective when the Senior Reactor Operator (SRO) stepped outside of his oversight role and became involved in the process.

There were no personnel injuries, no offsite radiological releases, and no damage to safety-related equipment.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

I. DESCRIPTION OF EVENT

A. REPORTABLE EVENT CLASSIFICATION

This event is reportable pursuant to 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section.

B. PLANT OPERATING CONDITIONS PRIOR TO EVENT

STP Unit 1 was in Mode 1 at 100% power.

C. STATUS OF STRUCTURES, SYSTEMS, AND COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

No other structures, systems, or components were inoperable at the start of the event and contributed to the event.

D. NARRATIVE SUMMARY OF THE EVENT

August 20, 2010 at approximately 1500 hours, a Unit 1 Reactor Operator (RO) functioning as a Test Coordinator (TC) commenced performing Surveillance Test 0PSP03-SP-0006R, Train R Reactor Trip Breaker Trip Actuating Device Operability Test (TADOT), in the Unit 1 Solid State Protection System (SSPS) Train R cabinet. The Unit 2 Field Senior Reactor Operator (SRO) performed the supervisor oversight and dual verification in support of the test activities.

During the performance of procedure 0PSP03-SP-0006R section 5.3, the TC and SRO completed steps 5.3.1 through 5.3.3 in the SSPS Train R cabinet. The TC then directed the Plant Operators (POs) to perform step 5.3.4 to ensure the Reactor Trip Bypass Breaker R closed. Once the POs reported that step 5.3.4 was completed, the TC then proceeded with steps 5.3.5, then appropriately marked steps 5.3.6 through 5.3.8 as Not Applicable (N/A); and then performed step 5.3.9. The TC then paged forward in the procedure and inadvertently turned two pages instead of one page. This resulted in the TC missing procedure step 5.3.10 that would have blocked the Turbine Trip actuation signal. The SRO did not notice the TC had missed a procedure page. The TC completed step 5.3.12 and the SRO performed the Dual Verification (DV) for the step. The SRO then took the test procedure book to the 10 foot elevation of the Electrical Auxiliary Building and observed Electricians take the continuity reading for the test.

After the Electricians performed their step in the procedure, the SRO returned to the SSPS Train R cabinet and gave the TC the procedure book. The TC then directed the POs to perform steps 5.3.14, 5.3.15, and 5.3.16 at the Reactor Trip Switchgear. While the POs were performing their steps, the TC and SRO discussed how they would perform step 5.3.17. With that discussion the TC and SRO agreed the prudent method to perform step 5.3.17 would be for the TC to manage the procedure book and the headset and the SRO would depress the test pushbuttons. Both the TC and SRO read the procedure step 5.3.17, after which the SRO depressed the test pushbuttons

resulting in the Unit 1 Turbine Trip/ Reactor Trip at approximately 1525 hours.

E. METHOD OF DISCOVERY

Upon hearing the Unit 1 Reactor trip announcement; the SRO returned to the Unit 1 Control Room to perform the Shift Technical Advisor (STA) duties for a Reactor trip.

After Unit 1 was stable, the SRO reviewed the paperwork for 0PSP03-SP-0006R and noted the missed procedure step. The SRO notified the Unit 1 Shift Manager (SM) regarding the missed procedure step in 0PSP03-SP-0006R that caused the Unit 1 Reactor trip.

II. EVENT-DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

All required safety systems responded as expected including the following actuations:

1. Reactor Protection System P-16, Train R Initiated Turbine Trip
2. Reactor Protection System P-9, with Reactor Power > 50% Initiated a Reactor Trip
3. Feedwater Isolation Actuation
4. Auxiliary Feedwater Actuation (All AFW pumps actuated)
5. Primary Pressure Control (Pressurizer Spray and Heaters actuated as required)
6. Secondary Pressure Control Actuation (Steam Dumps Actuated)

B. DURATION OF SAFETY SYSTEM INOPERABILITY

N/A

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

Extent of Condition:

The extent of condition for this event exists in the SSPS surveillance tests for system/component actuation circuitry that verifies the circuit with the output blocked. The extent of condition also can affect tests and/or procedures that are conducted from a controlling station with multiple locations performing procedure steps and/or sections. The investigation identified two root causes associated with the event and four (4) deficiencies. From a broader perspective, the corrective actions addressing the root causes are adequate to address this extent of condition across the site.

Risk Assessment:

The Conditional Core Damage Probability (CCDP) for the Turbine Trip in Unit 1 (CR 10-17990) on 08/20/2010 is 2.65E-07.

The conditional probability of a large early release given a turbine trip is 6E-09.

This event did not impact or jeopardize nuclear safety; plant mitigating system and personnel responded as expected when the plant tripped. The event did not challenge or impact the plant's emergency preparedness or plant security abilities to perform their functions. The event did not impact or jeopardize radiological safety, the public safety, or the safety of station personnel. Operability and functionality of risk-significant equipment was not affected by this event. Plant reliability was not affected. The plant experienced an unplanned and uncomplicated automatic reactor trip.

III. CAUSE OF THE EVENT

Root Cause No. 1 (Organizational)
Procedure place keeping standards for the site were less than adequate. Personnel performing surveillance test procedure 0PSP03-SP-0006R inadvertently turned forward in the procedure two pages instead of one page as they had intended. In doing so, a critical test step that would have blocked a Turbine Trip signal was missed. The missed page went undetected because the site place keeping standard did not clearly define how to place keep procedure pages. Before this event, the site believed the standard for place keeping was adequate based on past successes. The vulnerability of the site to an event caused by missing a procedure page was not recognized until this event occurred.

Root Cause No. 2 (Organizational)
Supervisory Oversight of surveillance test procedure 0PSP03-SP-0006R became ineffective when the SRO stepped outside of his oversight role and became involved in the process. The SRO was clearly outside of his oversight role when he was performing DV and operating equipment. Once outside of the oversight role, the SRO was no longer able to detect the error made by the test performer. The SRO performing DV and other actions to facilitate the performance of surveillance tests when more that one operator is needed has been a long standing practice. Without proper SRO Oversight, deviation from station standards such as inconsistencies with procedure place keeping went undetected and uncorrected until a human performance event occurred.

IV. CORRECTIVE ACTIONS

1. Revise 0PGP03-ZA-0010, Performing and Verifying Station Activities, to implement the Circle and Slash human performance tool designed to optimize human performance for place keeping. The tool applies to procedures and written instructions that alter system component or sub-component configuration of the plant, primarily, but not limited to Operations, Chemistry, and Performance Testing.

2. Revise Conduct of Operations Chapter 2, to require the use of Circle and Slash as an additional human performance tool and human error reduction method for written instructions.

3. Develop training material for training all STPNOC personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

4. Train Operations personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

5. Train PMPI personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

6. Train Electrical Maintenance personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

7. Train Mechanical Maintenance personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

8. Train I&C personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

9. Train Performance Technicians on the expectations and use of the Circle and Slash human performance error reduction tool.

10. Train Chemistry personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

11. Train Health Physic personnel on the expectations and use of the Circle and Slash human performance error reduction tool.

12. Train MOST personnel on the expectations and use of the circle and slash human performance error reduction tool.

13. Train MSS personnel on the expectations and use of the circle and slash human performance error reduction tool.

14. Revise Conduct of Operation Chapter 2 to ensure SROs assigned to a supervisor position or an oversight role of an evolution or task, are prohibited from direct manipulation of plant control(s), switch(s), valve(s), controller(s), breaker(s), or any other component that changes configuration, in the Control Room or outside the Control Room. This shall also prohibit any SRO, who is in a supervisory role or an oversight role from being an Independent or Dual Verifier.

15. Provide training on the changes made to the Conduct of Operations Chapter 2 in response to this event.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

V. PREVIOUS SIMILAR EVENTS

None.

VI. ADDITIONAL INFORMATION

None.