



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

March 11, 2010  
NOC-AE-10002529  
10 CFR 50.73

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

South Texas Project  
Unit 2  
Docket No. STN 50-499  
Licensee Event Report 2-2010-002  
Unanalyzed Condition Regarding the Fire Protection System

Pursuant to 10 CFR 50.73, the STP Nuclear Operating Company (STPNOC) submits the attached Unit 2 Licensee Event Report 2-2010-002 as a result of the inadvertent isolation of the fire water supply header for fire areas in Unit 2 where the Fire Hazards Analysis credits the availability of water suppression for safe shutdown in the event of a fire. This condition is reportable under 10 CFR 50.73(a)(2)(ii)(B) as an unanalyzed condition that significantly degraded plant safety.

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

There are no commitments contained in this Licensee Event Report. Corrective actions were processed in accordance with the STP Corrective Action Program.

If there are any questions on this submittal, please contact either Ken Taplett (361) 972-8416 or me at (361) 972-7158.

L. W. Peter  
Plant General Manager

A handwritten signature in black ink, appearing to read "L. W. Peter", is written over a horizontal line.

KJT

Attachment: LER 2-2010-002, Unanalyzed Condition Regarding the Fire Protection System

IEZZ  
NRK

cc:

(paper copy)

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## LICENSEE EVENT REPORT (LER)

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

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](mailto: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.

## 1. FACILITY NAME

South Texas Unit 2

## 2. DOCKET NUMBER

05000499

## 3. PAGE

1 OF 5

## 4. TITLE

Unanalyzed Condition Regarding the Fire Protection System

## 5. EVENT DATE

MONTH	DAY	YEAR
07	07	2008

## 6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2010	--002 --	00

## 7. REPORT DATE

MONTH	DAY	YEAR
03	11	2010

## 8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCUMENT NUMBER
	05000
FACILITY NAME	DOCUMENT NUMBER
	05000

## 9. OPERATING MODE

Mode 1

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

- |   |   |  |   |
|---|---|--|---|
| <input type="checkbox"/> 20.2201(b)         | <input type="checkbox"/> 20.2203(a)(3)(i)   | <input type="checkbox"/> 50.73(a)(2)(i)(C)             | <input type="checkbox"/> 50.73(a)(2)(vii)     |
| <input type="checkbox"/> 20.2201(d)         | <input type="checkbox"/> 20.2203(a)(3)(ii)  | <input type="checkbox"/> 50.73(a)(2)(ii)(A)            | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1)      | <input type="checkbox"/> 20.2203(a)(4)      | <input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i)   | <input type="checkbox"/> 50.36(c)(1)(i)(A)  | <input type="checkbox"/> 50.73(a)(2)(iii)              | <input type="checkbox"/> 50.73(a)(2)(ix)(A)   |
| <input type="checkbox"/> 20.2203(a)(2)(ii)  | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A)            | <input type="checkbox"/> 50.73(a)(2)(x)       |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2)        | <input type="checkbox"/> 50.73(a)(2)(v)(A)             | <input type="checkbox"/> 73.71(a)(4)          |
| <input type="checkbox"/> 20.2203(a)(2)(iv)  | <input type="checkbox"/> 50.46(a)(3)(ii)    | <input type="checkbox"/> 50.73(a)(2)(v)(B)             | <input type="checkbox"/> 73.71(a)(5)          |
| <input type="checkbox"/> 20.2203(a)(2)(v)   | <input type="checkbox"/> 50.73(a)(2)(i)(A)  | <input type="checkbox"/> 50.73(a)(2)(v)(C)             | <input type="checkbox"/> OTHER                |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  | <input type="checkbox"/> 50.73(a)(2)(i)(B)  | <input type="checkbox"/> 50.73(a)(2)(v)(D)             | <input type="checkbox"/> VOLUNTARY LER        |

## 10. POWER LEVEL

100%

## 12. LICENSEE CONTACT FOR THIS LER

NAME

Ken Taplett, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

361-972-8416

## 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

## 14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO15. EXPECTED  
SUBMISSION  
DATE

MONTH	DAY	YEAR

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

On July 7, 2008 at 2211 hours, both Unit 1 and Unit 2 control rooms received fire detection system alarms on the fire detection computer due to reduced pressure in an isolated portion of the fire protection main ring header. In response to the alarms, an Equipment Clearance Order was released that had isolated the header. The number one diesel-driven fire pump was started to maintain system pressure. The fire protection main ring header was restored to service on July 8, 2008 at 0057 hours.

The root cause of the inadvertent isolation of a portion of the fire protection main ring header was the general absence of adequate process controls for assessing the aggregate impact of multiple work activities on the fire protection system functionality.

Corrective actions included revising procedures for establishing fire protection system functionality requirements and for establishing plant operations department administrative guidelines to provide clear guidance and direction for removal of fire protection system components and/or sections of the fire water main from service. A fire protection system owner was designated to coordinate all activities that affect system configuration.

The inadvertent isolation of a portion of the fire protection main ring header adversely impacted three fire areas in Unit 2 containing redundant safe shutdown equipment. The Fire Hazards Analysis credits the availability of water suppression in these affected fire areas for safe shutdown in the event of a fire. This event resulted in no personnel injuries, no offsite radiological releases, and no damage to safety-related equipment.

**LICENSEE EVENT REPORT (LER)**  
CONTINUATION SHEET

1. FACILITY NAME  South Texas, Unit 2	2. DOCKET  05000499	<table border="1"> <tr> <th colspan="3">6. LER NUMBER</th></tr> <tr> <th>YEAR</th><th>SEQUENTIAL NUMBER</th><th>REV NO.</th></tr> <tr> <td>2010</td><td>-- 002 --</td><td>00</td></tr> </table>	6. LER NUMBER			YEAR	SEQUENTIAL NUMBER	REV NO.	2010	-- 002 --	00	3. PAGE  2 OF 5
6. LER NUMBER												
YEAR	SEQUENTIAL NUMBER	REV NO.										
2010	-- 002 --	00										

**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)(ii)(B). The fire water supply header was inadvertently isolated to fire areas in Unit 2 where the Fire Hazards Analysis credits water suppression for the achievement of safe shutdown in the event of a fire. This condition represented an unanalyzed condition that significantly degraded plant safety.

**B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT**

STP Unit 2 was in Mode 1 at 100% power.

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

No other inoperable structures, systems, or components contributed to the event.

**D. NARRATIVE SUMMARY OF THE EVENT** *(include dates and approximate times)*

On July 6, 2008 at 1325 hours, an equipment clearance order (ECO) was approved in Unit 2 that removed part of the fire protection main ring header from service. On July 7, 2008 at 1929 hours, a different ECO was approved in Unit 1 that removed additional parts of the fire protection main ring header from service.

On July 7, 2008 at 2211 hours, both Unit 1 and Unit 2 control rooms started to receive fire detection system alarms on the fire detection computer due to reduced pressure in the isolated portion of the fire protection main ring header. In response to the alarms, Unit 1 approved release of the ECO previously approved for this Unit. The number one diesel-driven fire pump was started to maintain system pressure. The fire protection main ring header was restored to service on July 8, 2008 at 0057 hours.

Subsequent investigation determined that an ECO in Unit 2 supported a different work package than the work package that was supported by the ECO in Unit 1. Although the work week management was aware that both work packages were scheduled for the same work week, work schedule reviews did not identify the aggregate impact on the fire protection main ring header functionality if both jobs were worked simultaneously.

The isolation of a portion of the fire protection main ring header adversely impacted three fire areas in Unit 2 containing redundant safe shutdown equipment. No fire areas in Unit 1 containing redundant safe shutdown equipment were adversely impacted. The Fire

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

Hazards Analysis credits water suppression in these affected fire areas for the achievement of safe shutdown in the event of a fire. Specifically:

- Fire Area 03 is a multi-elevation area in the Mechanical/Electrical Auxiliary Building (MEAB). The analysis states that the consequence of a fire in this fire area will be mitigated by manual compensating operator action and adequate spatial separation with automatic suppression.
- Fire Area 20 is a nonradioactive pipe chase located at elevation 27 foot in the MEAB. The analysis states that the consequence of a fire in this fire area will be mitigated by manual compensating operator action and adequate spatial separation with automatic suppression.
- Fire Area 63 is the reactor containment building. A manually operated special hazard spray system is installed to prevent the vertical spread of a fire in containment from one safety train to another. The analysis states that the combination of protection (i.e. spray system) and separation, coupled with the low combustible concentrations, limited and controlled access, and the large containment free volume, provides protection from exposure fires and ensures the integrity of at least one pathway required for safe shutdown.

**E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL OR PERSONNEL ERROR**

The loss of part of the fire protection main ring header was self-revealing when the fire detection computer alarmed due to reduced pressure in the isolated portion of the fire protection main ring header.

**II. COMPONENT OR SYSTEM FAILURES**

**A. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT**

No component failed. The fire protection main ring header was isolated.

**B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE**

Not applicable.

**C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS**

Not applicable.

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

**D. FAILED COMPONENT INFORMATION**

Not applicable.

**III. ANALYSIS OF THE EVENT**

**A. SAFETY SYSTEM RESPONSES THAT OCCURRED**

No safety systems were required to respond during this event.

**B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY**

Objective evidence from the security computer door card readers (i.e., to aid in determining the times that operators proceeded to hang the ECO) and the fire detection computer (i.e., fire protection system parameters returned to normal) conservatively indicate that the duration of this event was three hours and ten minutes.

**C. SAFETY CONSEQUENCES AND IMPLICATIONS**

**System Information:**

Plant fire protection systems which utilize water are supplied by an underground ring main system. The underground ring main supplies both Unit 1 and Unit 2. Redundant safe shutdown systems and components are generally compartmentalized with heavy concrete walls so that they are unlikely to be damaged from a single fire. In the cases where physical separation as a means of fire protection is not practicable, adequate detection and protection (e.g. water suppression) are installed. The STP Fire Hazards Analysis provides the safe shutdown analysis for each fire area containing safe shutdown systems and components.

**Risk Assessment:**

This event resulted in no personnel injuries, no offsite radiological releases, and no damage to safety-related equipment. The non-functional time of the removed part of the fire protection main ring header resulted in an incremental core damage probability of  $3.0E-8$  and an incremental large early release probability of  $1.5E-9$ .

**IV. CAUSE OF THE EVENT**

The root cause of the inadvertent isolation of a portion of the fire protection main ring header was the general absence of adequate process controls for assessing the aggregate impact of

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

multiple work activities on the fire protection system functionality.

**V. CORRECTIVE ACTIONS**

Procedures for establishing fire protection system functionality requirements and for establishing plant operations department administrative guidelines were revised to provide clear guidance and direction for removal of fire protection system components and/or sections of the fire water main from service.

A fire protection system owner was designated to coordinate all activities that affect system configuration.

**VI. PREVIOUS SIMILAR EVENTS**

There have been no previous Licensee Event Reports within the last three years involving an unanalyzed condition that significantly degraded plant safety.

In 2007, the fire suppression system to the Unit 1 Emergency Safety Features (ESF) Diesel Generators was inadvertently isolated. This event was determined to not be an unanalyzed condition that significantly degraded plant safety. The Fire Hazards Analysis credits compartmentalization for ensuring that one safe shutdown train remains available in the event of a fire in any of the fire areas that contain the ESF Diesel Generators. Suppression is not credited in the achievement of safe shutdown for these areas.

**VII. ADDITIONAL INFORMATION**

This event was initially determined to be not reportable. A re-evaluation of the event determined that the condition described in this event report represented an unanalyzed condition that significantly degraded plant safety and therefore is reportable pursuant to 10 CFR 50.73(a)(2)(ii)(B). A notification of the event pursuant to 10 CFR 50.72(b)(3)(ii)(B) was made to NRC on January 14, 2010 at 1659 hours (Event Notification number 45631).