



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

December 11, 2008
NOC-AE- 08002370
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 2008-001
Incorrectly Stored Fuel Assembly in U2 Spent Fuel Pool

Pursuant to 10 CFR 50.73, the South Texas Project (STP) submits the attached Unit 2 Licensee Event Report 2-08-001 as a result of discovery that a configuration of four discharged fuel assemblies in Region 2 of the Unit 2 spent fuel pool did not meet the Region 2 checkerboard storage configuration in T.S. 5.6.1.4. The configuration was intended to meet the Region 2 RCCA Checkerboard #1 requirements of Technical Specification Figure 5.6-14, which allows only Category 9 fuel assemblies. However, a Category 11 assembly, which did not satisfy Category 9 requirements, was used in place of a Category 9 assembly.

The as-found configuration was bounded by the safety limits since the Category 11 assembly is a less reactive assembly than the Category 9 assembly intended to be used. However, the requirements of T.S. figure 5.6-14 were not met in this configuration. 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 will be processed in accordance with the STP Corrective Action Program.

If there are any questions on this submittal, please contact either J. L. Paul at (361) 972-7344 or me at (361) 972-7849.

A handwritten signature in black ink, appearing to read "K. L. Coates".

K. L. Coates
Plant Manager

JLP

Attachment: LER 2-08-001, Incorrectly Stored Fuel Assembly in U2 Spent Fuel Pool

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, 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.

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4. TITLE
Incorrectly Stored Fuel Assembly in U2 Spent Fuel Pool

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
10	16	2008	2008	- 01 -	00	12	11	2008	N/A	05000
									N/A	05000

9. OPERATING MODE 5	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)								
10. POWER LEVEL 0	<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 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A									

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Jamie L. Paul, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) (361) 972-7344
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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)☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 16, 2008, while planning fuel movements in the Unit 2 spent fuel pool (SFP), a Category 11 fuel assembly was discovered in a location where only Category 9 fuel is allowed. Following this discovery, the incorrectly stored fuel was removed from its location and placed in an area of the SFP with no adjacent fuel assemblies. A Category 11 assembly is less reactive than a Category 9 assembly, and the as-found configuration was bounded by the safety analysis.

The investigation identified that the error occurred in the mapping of the SFP storage configuration, which is subsequently used to create fuel transfer forms (FTF). Both the FTF preparer and verifier performed inadequate self-checking and review. Contributing factors included a lack of detailed written guidance for performing this task and that the Reactor Engineer (RE) preparing the FTF did not realize that some fuel assemblies had decayed directly from a Category 8 to a Category 11. This resulted in fuel moves that stored a Category 11 assembly adjacent to Category 9 assemblies, which is not permitted by the Technical Specifications. A procedural guideline to control the process of developing the SFP configuration map is being developed to prevent future occurrences. In addition, all individuals who are responsible for performing this task were briefed on management expectations related to preparation, peer checking, and attention to detail. Both Unit 1 and Unit 2 SFPs were checked for a similar condition. No other occurrences of incorrectly stored fuel were identified.

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I. DESCRIPTION OF EVENT**A. REPORTABLE EVENT CLASSIFICATION**

This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). The South Texas Project (STP) determined that the checkerboard storage requirements of Technical Specification T.S. 5.6.1.4, allowable configurations of spent fuel assembly categories, were not met. Consequently, STP Unit 2 was in a condition prohibited by Technical Specifications.

B. PLANT OPERATING CONDITIONS PRIOR TO EVENT

STP Unit 2 was in Mode 6 with the reactor vessel defueled.

C. STATUS OF STRUCTURES, SYSTEMS, AND 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

Technical Specification 5.6.1.2 categorizes each fuel assembly by its reactivity based on several characteristics (initial enrichment, burnup, integrated fuel burnable absorber (IFBA) content, and decay time). Allowable storage configurations, or patterns, are then developed using the guidance in TS 5.6.1. Eleven fuel categories are defined by TS 5.6.1.2, from the highest to lowest reactivity (Category 1 to 11). The stored fuel assemblies must comply with the checkerboard requirements as specified in the TS 5.6 figures.

On 16 October, 2008, while planning fuel movements in the SFP during 2RE13, a Category 11 fuel assembly was discovered in a location where only Category 9 fuel is allowed. Following this discovery, the incorrectly stored fuel was removed from its location and placed in an area of the SFP with no adjacent fuel assemblies. Both Unit 1 and Unit 2 SFPs were checked for a similar condition, and no other occurrences of incorrectly stored fuel were found.

The investigation determined that the error occurred in the mapping of the SFP storage configuration, which is subsequently used to create fuel transfer forms. The storage configuration information available for planning displays only the maximum Category of each fuel assembly and the Reactor Engineer (RE) did not realize that some fuel assemblies had decayed directly from a Category 8 to a Category 11. This resulted in fuel moves that stored Category 9 fuel assemblies adjacent to Category 11 assemblies, which is not prescribed in the Technical Specifications.

The Fuel Transfer Form (FTF) with the incorrect information was approved and verified on 16 May, 2006 and implemented 17 May, 2006. This error was identified while reviews were being conducted for subsequent SFP moves on 16 October, 2008 during a U2 refueling outage.

Although not resulting in challenging the safety analysis, the requirements of T.S. 5.6.1.4, which prescribes allowable checkerboard fuel assembly storage configurations, were not met. This

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event resulted in no personnel injuries, no offsite radiological releases, and no damage to other safety-related equipment.

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

This error was captured when a Reactor Engineer was verifying fuel transfer forms in preparation for B5B fuel transfers. During the review and discussion, the originator and reviewer identified the error that a Category 11 fuel assembly was in a Category 9 location.

II. EVENT-DRIVEN INFORMATION

A. SAFETY SYSTEMS THAT RESPONDED

No safety systems were required to respond during this event.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

This event did not cause the inoperability of any safety systems. The FTF with the incorrect information was approved on 16 May, 2006. The FTF was implemented by placing the Category 11 fuel assembly in a Category 9 location on 17 May, 2006. The incorrect SFP configuration was discovered on 16 October, 2008 and relocated to an appropriate location on the same day.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

Category 11 fuel is less reactive than a Category 9 fuel. Therefore, placing a Category 11 fuel in a Category 9 location did not involve a challenge to any design criteria or safety barrier. In addition, the safety analysis accounts for a misplaced fuel assembly in the SFP. The analysis assumes a fresh assembly of 4.95 weight percent (w/o) is inserted into a rodged position of the checkerboard configuration where the Category 11 assembly resided. By maintaining the SFP boron concentration above the Technical Specification required value, the design criteria for maintaining $K_{eff} \leq 0.95$ was met with the misplaced assembly. Hence, the condition did not constitute an unanalyzed condition.

This event resulted in no personnel injuries, no offsite radiological releases, and no damage to other safety-related equipment.

III. CAUSE OF THE EVENT

The root cause of the error was that both the fuel transfer form preparer and verifier performed inadequate self-checking and review. One contributing factor was a lack of robust guidelines for planning and verification of the SFP configuration and its compliance with Technical Specification requirements which contributed to the human performance error. Another contributing factor was

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determined to be the organization and format of the SFP configuration map used in planning fuel moves which only identified the highest fuel Category and did not identify any skipped Categories.

IV. CORRECTIVE ACTIONS

- Following discovery of the non-conforming condition, a fuel transfer form was prepared and the incorrectly stored fuel assembly was removed and put into a cell location that met the T.S. requirements.
- All individuals who are trained on this Qualification (#9334) were briefed on management expectations related to preparation of Fuel Transfer Forms (FTF), peer checking, and paying attention to detail.
- Both Unit 1 and Unit 2 SFPs were checked for a similar condition. No other occurrences of incorrectly stored fuel assemblies were found.
- Existing procedural guideline will be revised to provide additional controls for developing SFP configuration maps and Fuel transfer Forms (FTF). This guidance will also include indicating skipped fuel Categories in addition to the highest fuel Category on the SFP map.

V. PREVIOUS SIMILAR EVENTS

A history review of condition reports did not identify any previous similar events at STP.

VI. ADDITIONAL INFORMATION

None.