



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

December 20, 2010
NOC-AE-10002627
File No.: G25
10 CFR 50.73
STI: 32799373

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 2-2010-004
Loss of the Train A Essential Cooling Water (ECW) System
Due to a Loss of the ECW Intake Structure Ventilation Fan 21A

Pursuant to 10 CFR 50.73, the STP Nuclear Operating Company (STPNOC) submits the attached Unit 2 Licensee Event Report (LER) 2-2010-004 to address the loss the Train A Essential Cooling Water (ECW) System due to a loss of the ECW intake structure ventilation fan 21A.

This condition is considered reportable under 10CFR 50.73(a)(2)(i)(B), any operation or condition that is prohibited by Technical Specifications.

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 implemented in accordance with the STP Corrective Action Program.

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

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

L. W. Peter
Plant General Manager

KJT

Attachment: LER 2-2010-004: Loss of the Train A Essential Cooling Water (ECW) System due to a loss of the ECW intake structure ventilation fan 21A

JE22
MRR

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
Loss of the Train A Essential Cooling Water (ECW) System due to a loss of the ECW intake structure ventilation fan 21A

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	28	2010	2010	- 004 -	0	12	20	2010	N/A	N/A
									FACILITY NAME	DOCKET NUMBER
									N/A	N/A

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)			
10. POWER LEVEL 100%	<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 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

NAME Ken Taplett, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 361-972-8416
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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 28, 2010 at 1235 hours, with Unit 2 in Mode 1 at 100 per cent power, the Train A Essential Cooling Water (ECW) System was declared inoperable due to a loss of the ECW intake structure ventilation fan 21A. The ventilation fan is a required support system for ensuring the operability of the Train A ECW System. The ECW System provides cooling for the Train A Engineered Safety Features (ESF) Standby Diesel Generator (SDG). Therefore, the Train A ESF SDG was declared inoperable and Action b of Technical Specification (TS) 3.8.1.1. was entered. Action b of TS 3.8.1.1 requires that with a SDG inoperable, demonstrate the operability of the TS required A.C. offsite sources by performing Surveillance Requirement (SR) 4.8.1.1.1.a within 1 hour. A subsequent investigation discovered that the ECW System had been inoperable earlier than the time that the ventilation fan was initially discovered not to be running so that the performance of SR 4.8.1.1.a. was not performed within the required TS time.

The inoperability of the ventilation fan occurred at 1030 hours on October 28, 2010 during calibration of the fan's high temperature switch. The root cause of this event was failure to adhere to human performance practices such as a questioning attitude and failure to adhere to the referenced procedure provided in the work instructions regarding how to perform cable terminations during implementation of a design change to install the new switch in 2005.

Corrective actions include revising work instructions for calibrating the high temperature switch to verify that control power is available to start the fan circuit after the calibration is completed; add the Operating Experience of this event to the Cable Termination training class; and discussing the Operating Experience with the appropriate disciplines at the station.

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)(i)(B), any operation or condition that is prohibited by Technical Specifications.

B. PLANT OPERATING CONDITIONS PRIOR TO EVENT

South Texas Project (STP) Unit 2 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 that contributed to the event.

D. NARRATIVE SUMMARY OF THE EVENT

On October 28, 2010 at 1235 hours, with Unit 2 in Mode 1 at 100 per cent power, the Train A Essential Cooling Water (ECW) System was declared inoperable due to a loss of the ECW intake structure ventilation fan 21A. The ventilation fan is a required support system for ensuring the operability of the Train A ECW System.

Unit 2 entered Action a of Technical Specification (TS) 3.7.4 which requires with only two ECW loops operable, within 7 days restore at least three loops to operable status or apply the requirements of the Configuration Risk Management Program, or be in at least hot standby within the next 6 hours and in cold shutdown within the following 30 hours.

The ECW System provides cooling for the Train A Engineered Safety Features (ESF) Standby Diesel Generator (SDG). Therefore, the Train A ESF SDG was declared inoperable and Action b of TS 3.8.1.1. was entered.

At 1245 hours, all required systems, subsystems, trains, components, and devices that depend on the remaining operable SDGs as a source of emergency power were verified operable. Auxiliary Feedwater Pump 24 was also verified operable. These actions satisfied the requirements of TS 3.8.1.1.d.

At approximately 1400 hours, a fuse was discovered blown in the running circuit for the ECW intake structure ventilation fan 21A. After the fuse was replaced, the ventilation fan restarted and checked to be satisfactorily running, the Train A ECW System and affected systems, including the Train ESF SDG, were declared operable at 1700 hours and the associated TS were exited.

A subsequent review of computer data indicated that the Train A intake structure ventilation fan 21A had tripped at 1030 hours on October 28, 2010. Since the fan was incapable of performing its support function, the Train A ECW System and the Train A ESF SDG had been inoperable since 1030 hours. There is no alarm indication in the control room associated with the ventilation fan. The running light for the ventilation fan is located in the control room on a control panel located behind the main control boards.

Action b of TS 3.8.1.1 requires that with a SDG inoperable, demonstrate the operability of the TS required A.C. offsite sources by performing surveillance requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter. This Action b requirement was not performed until 1316

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hours on October 28, 2010 although the initial time of operability (1030 hours) of the ESF SDG was not discovered until after the review of the computer data. Therefore, the requirements of Action b were not met. This is an operation or condition prohibited by the TS.

On October 28, 2010, a calibration of the high temperature switch of the ECW intake structure ventilation fan 21A was performed. The ventilation fan was not required to be made inoperable to calibrate the switch.

The calibration activity required pulling the switch probe Grayboot connectors from a conduit in order to connect test equipment to the Grayboot connectors on the switch side. The two loose Grayboot connector ends on the line side were taped to ensure neither came in contact with the conduit to prevent the ends from grounding. Following the calibration and removal of test equipment, the tape was removed, and the switch probe was re-connected and put back in the conduit.

Subsequent inspection of the Grayboot connectors found a lead from the switch, that is not used, had not been insulated where the leads were cut to length during manufacturing of the switch. This condition was not identified in the implementation of a design change in 2005 to install new the switch in the plant. It was concluded that this lead had grounded during putting the switch probe back together following calibration and thus blowing the fuse in the running circuit of the ventilation fan.

E. METHOD OF DISCOVERY

The ECW intake structure ventilation fan 21A was discovered to not be running at 1235 hours on October 28, 2010 when it was noted that the fan running light was extinguished.

II. EVENT-DRIVEN INFORMATION**A. SAFETY SYSTEMS THAT RESPONDED**

No safety systems were required to respond to this event.

B. DURATION OF SAFETY SYSTEM INOPERABILITY

Train A Essential Cooling Water (ECW) was declared inoperable due to a loss of the ECW intake structure ventilation fan 21A. The following Train A safety systems were declared inoperable because the ECW System supplies cooling for these systems.

- ESF SDG
- Emergency Core Cooling System
- Residual Heat Removal System
- Component Cooling Water System
- Essential Chilled Water System
- Containment Spray System
- Reactor Containment Fan Cooler System
- Control Room Makeup and Cleanup Filtration System

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These Train A safety systems were inoperable from 1030 hours on October 28, 2010 until 1700 hours on October 28, 2010, a period of 6 hours and 30 minutes.

C. SAFETY CONSEQUENCES AND IMPLICATIONS OF THE EVENT

There was no impact to radiological safety, safety of the public, or safety of station personnel during this event.

The ECW System is designed to supply cooling water to various safety-related systems for normal plant operation as well as normal shutdown and during and after postulated Design Basis Accidents. The Unit 2 Train B and Train C safety systems, each supplied by their independent ECW System, were fully capable of performing their safety function during this event.

For this event, the Incremental Conditional Core Damage Probability (ICCDP) was calculated to be 2.31E-10 and the Incremental Conditional Large Early Release Probability (ICLERP) was calculated to be 1.69E-11.

III. CAUSE OF THE EVENT

The work instructions for calibrating the high temperature switch for the ECW intake structure ventilation fan 21A referenced a plant procedure that provided guidance for addressing spare conductors when performing cable terminations. The instructions required that ends of hot spare conductors be insulated and secured.

The root cause of this event was failure to adhere to human performance practices such as a questioning attitude and failure to adhere to the referenced procedure provided in the work instructions regarding how to perform cable terminations during implementation of a design change to install the new switch in 2005.

IV. CORRECTIVE ACTIONS

Corrective actions will be implemented in accordance with the STP Corrective Action Program.

1. The work instructions for calibrating the high temperature switch for the ECW intake structure ventilation fan 21A will be revised to add a step to verify that control power is available to the fan start circuit after the calibration is completed.
2. This event will be added to the Cable Termination training class as Operating Experience.
3. The Operating Experience from this event will be discussed with the following disciplines:
 - Applicable shops within the Maintenance Department.
 - Contractor Electricians working at the station in the Plant Modification and Project Implementation Department.
 - Work Control Work Week Managers and Work Start Authorities.

V. PREVIOUS SIMILAR EVENTS

There have been no similar events at STP within the last three years.

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

Similar temperature switches installed in the plant will be inspected to ensure that any spare connector has been insulated to prevent potential grounding issues..