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David N. Lorfing
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March 11, 2009

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Licensee Event Report 50-458 / 09-001-00
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

File No. G9.5

RBG-46894
RBF1-09-0022

Dear Sir or Madam:

In accordance with 10CFR50.73, enclosed is the subject Licensee Event Report. This document contains no commitments.

Sincerely,

David N. Lorfing
Manager – Licensing

DNL/dhw
Enclosure

IE22
NRR

cc: U. S. Nuclear Regulatory Commission
Region IV
612 East Lamar Blvd., Suite 400
Arlington, TX 76011-4125

NRC Sr. Resident Inspector
P. O. Box 1050
St. Francisville, LA 70775

INPO Records Center
E-Mail (MS Word format)

Mr. Jim Calloway
Public Utility Commission of Texas
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Mr. Jeffrey P. Meyers
Louisiana Department of Environmental Quality
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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: 50 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

Standby Liquid Control System Inoperable Greater than Allowable Outage Time

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
										05000
01	14	2009	2009	- 001 -	00	03	11	2009	FACILITY NAME	DOCKET NUMBER 05000

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)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☒ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
David N. Lorfing, Manager – Licensing	225-381-4157

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)* ☒ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On January 14, 2009, an investigation of operational practices related to the standby liquid control (SLC) system concluded that for the period of March 14, 2003, to October 28, 2008, a seismic event could have rendered the system incapable of performing one of its design safety functions as credited in the station's accident analysis. This condition resulted from an inadequately evaluated change made to a surveillance test procedure that allowed water to remain in the system's test tank. The test tank is not seismically analyzed when full of water. Administrative controls have been put in place concerning draining of the tank following future tests. Test procedure revisions are being developed. The safety significance of this event is negligible. This event is reportable in accordance with 10CFR50.73 as operations prohibited by Technical Specifications and a loss of the safety function of the SLC system.

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REPORTED CONDITION

On January 14, 2009, an investigation of operational practices related to the standby liquid control (SLC) (**BR**) system concluded that for the period of March 14, 2003, to October 28, 2008, a seismic event could have rendered the system incapable of performing one of its design safety functions as credited in the station's accident analysis. This condition resulted from an inadequately evaluated change made to a surveillance test procedure that allowed water to remain in the system's test tank (**TK**). The test tank is not seismically analyzed when full of water. This event is reportable in accordance with 10CFR50.73 as operations prohibited by Technical Specifications and a loss of the safety function of the SLC system.

BACKGROUND

The SLC system is a safety related design feature installed to provide a means of shutting the reactor down in the event of a failure of the reactor control rod drive system. The system contains redundant pumps powered from the emergency diesel generators that would be used to inject a sodium pentaborate solution into the reactor when directed by operating procedures. The solution is contained in a tank that can supply either or both of the pumps.

A separate 250-gallon tank is built into the system to serve as a suction source of clean water for performing periodic surveillance testing of the pumps and the associated motor-operated valves. The test tank has steel supports that elevate it approximately 16 inches off the floor. The test tank is designed to remain intact in the event of the design basis seismic event, assuming that the tank is empty.

When RBS implemented License Amendment No. 132 (Alternative Source Term) in 2003, the SLC system gained a new design function related to operations following a postulated loss of coolant accident (LOCA). In order to mitigate the release of radionuclides into the primary containment atmosphere in the post-LOCA environment, the SLC system is assumed to be used for pH control of the suppression pool. The analysis assumes that the SLC system is initiated at a certain time in the event, and that the borated solution will leave the reactor vessel through the postulated break in the coolant system piping. The solution would drain to the suppression pool where it would provide a buffering effect in maintaining the pH above a value of 7.

Prior to the implementation of the Alternative Source Term amendment, suppression pool pH control was not a design function of the system.

CAUSAL ANALYSIS and IMMEDIATE CORRECTIVE ACTIONS

The investigation of this event found that, in 1992, surveillance test procedures were revised to remove the requirement to drain the test tank upon completion of surveillance tests prior to returning the system to service. The review of the proposed procedure change did not surface the fact that the test tank is not designed to withstand seismic loading when it is full of water.

To determine whether the filled condition of the test tank had any adverse effects on the operability of the SLC system, an analysis was performed to identify the likely failure effects. It was found that the tank could possibly fall in two different directions due to failure of the supports. In the worst case scenario, cables attached to a junction box mounted in the immediate vicinity of the test tank outlet valve could be damaged due to impact. The limit switches on the test tank outlet valve are necessary to satisfy an "open" interlock with Division 1 and 2 outlet valves on the main storage tank (i.e., the storage tank outlet valves will not open unless the test tank outlet valve is fully closed). Breakage of the cable from the "CLOSED" limit switch would block any opening signal to the storage tank outlet valves. Since it could be postulated that both outlet valves would be affected, this scenario would render the SLC system incapable of performing its function.

When the status of the SLC test tank was originally questioned in October 2008, the tank was drained as a conservative measure since it was not clear what potentially adverse effects were posed by keeping the tank full. It was the investigation of that question that determined the specific details contained in this report.

CORRECTIVE ACTIONS TO PREVENT RECURRENCE

An administrative tracking mechanism has been put into place for the affected surveillance test regarding the draining of the test tank. Guidance for draining the SLC test tank was incorporated into the system operating procedure.

Further procedure revisions are being developed. This action is being tracked in the station's corrective action program.

PREVIOUS OCCURRENCE EVALUATION

A review of events reported by River Bend Station since January 2004 found no similar conditions.

SAFETY SIGNIFICANCE

The past condition of storing water in the SLC Test Tank had no actual impact on nuclear safety as there were no seismic events or other events requiring SLC system response. However, during the time period March 14, 2003, through October 28, 2008, the postulated test tank failure could have rendered the SLC system unable to respond following a postulated LOCA in conjunction with a seismic event. The resultant lack of suppression pool pH control could have resulted in aerosol particulate iodine (cesium iodide) deposited in the suppression pool to re-evolve and become airborne as elemental iodine. Prior to the implementation of the Alternative Source Term amendment, suppression pool pH control was not a design function of the system.

RBS has not performed a dose consequences evaluation with re-evolution of iodine. However, an iodine re-evolution study performed at a plant of similar design has concluded that the impact on

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doses due to re-evolution is negligible. Thus, while RBS has not performed a plant specific dose consequences evaluation with respect to iodine re-evolution, it is reasonable to conclude that the impact on calculated dose from iodine re-evolution would be minor. Correspondingly, it is reasonable to conclude that given the margin between the RBS Alternate Source Term calculated doses and 10CFR50.67 limits, the minor change in dose from iodine re-evolution would not result in exceeding 10CFR50.67 limits.

(NOTE: Energy Industry Component Identification codes and system identification codes are annotated as (**XX**).)