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**Rick J. King**  
Director  
Nuclear Safety Assurance

July 7, 2003

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

Subject: River Bend Station  
Docket No. 50-458  
License No. NPF-47  
Licensee Event Report 50-458 / 03-006-00

File Nos. G9.5, G9.25.1.3

RBG-46140  
RBF1-03-0121

Ladies and Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject Licensee Event Report.  
Commitments are summarized on the Commitment Identification Form.

Sincerely,

A handwritten signature in black ink, appearing to read "Rick J. King".

RJK/dhw  
Enclosure

IE22

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cc: U. S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

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

INPO Records Center  
E-Mail

Mr. Jim Calloway  
Public Utility Commission of Texas  
1701 N. Congress Ave.  
Austin, TX 78711-3326

Louisiana Department of Environmental Quality  
Office of Environmental Compliance  
Surveillance Division  
Radiological Emergency Planning & Response Unit  
P.O. Box 4312  
Baton Rouge, LA 70821-4312  
Attn: Prosanta Chowdhury

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Commitment Identification Form

COMMITMENT	ONE-TIME ACTION*	CONTINUING COMPLIANCE*
An evaluation of the SWP system will be performed, and a resolution developed, to optimize the method of shifting pumps in order to avoid the pressure transients currently being experienced.	X	

\*Check one only

## LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory information 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 Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [bj1@nrc.gov](mailto:bj1@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 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.

FACILITY NAME (1)

River Bend Station

DOCKET NUMBER (2)

050- 458

PAGE (3)

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TITLE (4)

Automatic Initiation of Standby Service Water System Due to Inadequate Control of System Operations

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
05	07	2003	2003	006	00	07	07	2003	FACILITY NAME	DOCKET NUMBER	
										05000	
									FACILITY NAME	DOCKET NUMBER	
										05000	
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)							
POWER LEVEL (10)		100%		20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)	
				20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
				20.2203(a)(1)		50.36(c)(1)(i)(A)		X 50.73(a)(2)(iv)(A)		73.71(a)(4)	
				20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)	
				20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A	
				20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)			
				20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)			
				20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)			
20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)							
20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)							

## LICENSEE CONTACT FOR THIS LER (12)

NAME

J.W. Leavines, Manager - Licensing

TELEPHONE NUMBER (Include Area Code)

225-381-4642

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

## SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED  
SUBMISSION  
DATE (15)

MONTH

DAY

YEAR

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 7, 2003, at approximately 9:05 a.m., the plant was operating at 100 percent power when an unplanned initiation of the Division 2 standby service water (SSW) system occurred. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition that caused the automatic actuation of an emergency service water system. An unexpected low pressure condition that occurred during a scheduled shift of the normal service water (SWP) pumps caused the automatic start of the Division 2 SSW system. The system was returned to its standby configuration at approximately 11:41 a.m. This event was caused by inadequate margin in the operating parameters of the SWP system to the initiation setpoint of the SSW system. A review of the SWP system will be performed to minimize the vulnerability to recurrence of a similar event. The standby service water system responded as designed to the low pressure initiation signal. This event was of minimal significance to the health and safety of the public.

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

**REPORTED EVENT**

On May 7, 2003, at approximately 9:05 a.m., the plant was operating at 100 percent power when an unplanned initiation of the Division 2 standby service water (SSW) system occurred. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition that caused the automatic actuation of an emergency service water system. An unexpected low pressure condition that occurred during a scheduled shift of the normal service water (SWP) pumps caused the automatic start of the Division 2 SSW system. The SSW system was returned to its standby configuration at approximately 11:41 a.m.

**INVESTIGATION**

The SWP (\*\*KG\*\*) system contains three 50 percent capacity pumps (\*\*P\*\*) and supplies all auxiliary plant cooling loads in the normal configuration. The safety-related SSW system contains four dedicated pumps that are normally in a standby condition. Safety-related isolation valves isolate the SSW (\*\*BI\*\*) piping and its served components from the non-safety related part of the system in the event of an automatic initiation. Automatic start signals to the SSW pumps include a low pressure condition at 76 psig in the SSW pump header.

At the time of the event, a scheduled shift of the SWP pumps was being performed. It was intended that the "B" pump be secured, and the "C" pump started. The system operating procedure directs that a running pump be shut down, allowing the idle pump to start automatically on a low pressure signal of 97 psig. The procedure directs that SWP flow and pressure be adjusted to minimize the pressure drop experienced during the shift. When the pump shift was performed, the Division 2 SSW pumps automatically started. The operators implemented the appropriate abnormal operations procedures.

Following the event, a review of the system configuration was conducted. It was discovered that all three turbine plant component cooling water (CCS) (\*\*KB\*\*) heat exchangers were in service (i.e., SWP throttle valve open). The normal configuration is two heat exchangers in service, with no SWP flow through the third. The third heat exchanger was placed in service during the recent refueling outage in March 2003 to reduce SWP pressure, which was near its upper limit due to low system heat load. The abnormal SWP valve configuration was noted on a status board in the main control room. The condition was also annotated in operator turnover instructions. However, a tag required by the administrative procedure for configuration control was not placed on the valve itself. This would also have included a specific entry in the configuration control log, which was not completed. The condition was reviewed by numerous

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

operating crews over the course of the remainder of the outage, and it had been concluded that this was an allowable configuration. During preparations for plant startup, the note was removed from the turnover instructions with no action taken to take the third heat exchanger out of service.

The investigation also found that the third heat exchanger in the reactor plant component cooling water (CCP) (\*\*CC\*\*) system was in service. While the CCP system operating procedure does not preclude this configuration, it has been documented in the station corrective action program that this condition is not consistent with those assumed in the engineering model used to analyze SWP system flow balance.

#### CAUSAL ANALYSIS

The investigation of this event concluded that the SWP operating procedure does not establish system conditions for a pump shift that provide sufficient margin to the automatic start setpoint of the SSW pumps. The SWP supply pressure decreases during routine pump shifts using the current methodology. Depending upon system loads and configuration, SWP supply pressure may closely approach the initiation setpoint of the SSW system.

The primary contributing cause of the event was the abnormal configuration of the CCS heat exchangers. The CCS and SWP system operating procedures did not provide clear direction that only two of the heat exchangers in each system were to be in service at one time. This resulted in the as-found alignment in which SWP flow was aligned to all three CCS heat exchangers. After consulting the procedures, the operators decided that having all three heat exchangers in service was an allowable configuration, and thus did not implement the proper procedure steps to tag the SWP valve that was opened during the outage. Likewise, the CCP system operating procedure did not prohibit having all three heat exchangers in service.

A condition contributing to this event was the performance of the SWP pumps. The three pumps have slightly different output capacities, resulting from varying operating hours since overhaul. The "B" pump has the highest capacity, and the "C" pump has the lowest capacity. This, in conjunction with the CCS and CCP valve alignment, caused the maximum possible pressure transient of any configuration during a pump shift. During a pump shift in April 2003 (during which the third CCS heat exchanger was in service), the "C" pump was shut down and the "B" pump was started. At that time, one of the four pressure transmitters that actuate the SSW system tripped (two out of four transmitters are required to trip for the SSW system to be actuated), which revealed that the operating margins were small.

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

**CORRECTIVE ACTION TO PREVENT RECURRENCE**

The following actions are being taken:

1. Management expectations regarding the administrative controls of abnormal component alignment were discussed with all operating crews.
2. An evaluation of the SWP system will be performed, and a resolution developed, to optimize the method of shifting pumps in order to avoid the pressure transients currently being experienced.

**PREVIOUS OCCURRENCE EVALUATION**

A review of SSW actuations since 1995 found that none were caused by routine shifts of the SWP pumps.

**SAFETY SIGNIFICANCE**

The standby service water system responded as designed to the low pressure initiation signal. This event was of minimal significance to the health and safety of the public.

(NOTE: Energy Industry Component Identification codes are annotated as (\*\*XX\*\*).)