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June 12, 2000

U. S. Nuclear Regulatory Commission
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Subject: Licensee Event Report 50-458 / 00-08-00
River Bend Station
Docket No. 50-458
License No. NPF-47

File Nos. G9.5, G9.25.1.3

RBG-45377
RBF1-00-0130

Ladies and Gentlemen,

In accordance with 10CFR50.73, enclosed is the subject Licensee Event Report. There are no commitments in this document.

Sincerely,

RJK/dhw
enclosure

IE22

RGN-001

cc: U. S. Nuclear Regulatory Commission
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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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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TITLE (4)

Unplanned Automatic Isolation of Reactor Water Cleanup System During System Configuration Change Due to Mispositioned Manual Valves

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	11	2000	2000	08	00	06	12	2000	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	100%	20.2201(b)	20.2203(a)(2)(v)	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)	X 50.73(a)(2)(iv)	OTHER
		20.2203(a)(2)(iii)	50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
		20.2203(a)(2)(iv)	50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
J. W. Leavines, Manager - Licensing	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)		EXPECTED	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	✓ NO				

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

On May 11, 2000, at approximately 8:18 a.m., an unplanned automatic actuation of the primary containment isolation valves in the reactor water cleanup system occurred. The system configuration was being shifted at the time, as operators were attempting to place one of the system's demineralizers in service. When the demineralizer inlet and outlet valves were opened, a high differential system flow alarm actuated. Following a built-in time delay, the differential flow condition actuated the isolation control circuitry and caused the containment isolation valves to close. This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition which caused the automatic actuation of an engineered safety feature.

The cause of the high differential flow condition was mispositioned manual strainer backwash valves, which allowed part of the system flow to be diverted to the demineralizer backwash receiving tank. Due to degradation of the valve travel stops, the operator was led to believe the valves were closed when they were actually partially open. The operator relied on the travel stops to determine valve position.

Other than the primary containment isolation valves, the RWCU system does not perform an active safety function. Its removal from service had no immediate adverse effect on plant operation, and it was restored to service later the same day. The diverted system flow was contained within the demineralizer backwash receiving tank. This event had minimal potential to affect the health and safety of the public.

REPORTED CONDITION

On May 11, 2000, at approximately 8:18 a.m., an unplanned automatic actuation of the primary containment isolation valves (**ISV**) in the reactor water cleanup (RWCU) system occurred. The system configuration was being shifted at the time, as operators were attempting to place one of the system's demineralizers (**FDM**) in service. When the demineralizer inlet and outlet valves were opened, a high differential system flow alarm (**ALM**) actuated. Following a built-in time delay, the differential flow condition actuated the isolation control circuitry and caused the containment isolation valves to close.

This event is being reported in accordance with 10CFR50.73(a)(2)(iv) as a condition which caused the automatic actuation of an engineered safety feature.

INVESTIGATION AND IMMEDIATE CORRECTIVE ACTION

The RWCU system is connected to the reactor coolant system, and portions of it are located outside the primary containment. Its primary function is to maintain reactor water chemistry within specifications. The four motor-operated valves which automatically closed are part of the primary containment boundary, and are designed to automatically close in response to certain system parameters. RWCU system flow is monitored at three points, and these flow signals are continuously compared by the isolation control circuitry for the purpose of detecting a pipe break. The high differential flow signal of greater than 55 gallons per minute actuates an alarm in the main control room immediately, but must exist for a duration sufficient to clear a built-in time delay in order to cause a system isolation signal. This 45-second time delay allows flow perturbations associated with, for example, system configuration changes to stabilize without causing an unnecessary isolation signal.

Following the isolation, operators verifying the system configuration found that two manually-operated strainer backwash valves in the demineralizer outlet line were partially open when they should have been closed. The manual valves are quarter-turn ball valves and are operated by remote "reach rod" actuators, since the valves themselves are located in a high radiation area. The valve position had been checked closed as part of the procedure to prepare the demineralizer for operation. The operator checking the valve position questioned the indication provided at the reach rod levers, so a second operator entered the demineralizer valve room and verified the position locally. The second operator looked at the valve travel stops and deduced that the valves were closed. However, he did not realize that the travel stop mechanism on both valves had become worn such that they were not properly limiting valve movement, and were giving false indication of valve position.

When the demineralizer inlet and outlet valves were opened, the partially open manual valves allowed part of the system flow to be diverted to the demineralizer backwash receiving tank, causing the differential flow condition that actuated the alarm in the main control room. The demineralizer backwash receiving tank is located inside the primary containment. The control room operator notified the operators at the demineralizer control panel of the alarm, but the condition could not be corrected before the time delay relay actuated. The closure of the containment isolation valves caused an automatic trip of the RWCU pumps, and the high differential flow signal cleared.

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CAUSAL ANALYSIS AND CORRECTIVE ACTION TO PREVENT RECURRENCE

The cause of the high differential flow condition was the mispositioned manual strainer backwash valves, which allowed part of the system flow to be diverted to the demineralizer backwash receiving tank. Due to wear of the valve travel stops, the operator was led to believe the valves were closed when they were actually partially open. The operator relied on the travel stops to determine valve position.

Remedial training was provided to operators instructing them to use the integral valve position indicator on the stem adapter and not the travel stops when determining actual valve position. The affected manual valves were tagged with instructions regarding the proper method of verifying valve position.

PREVIOUS OCCURRENCE EVALUATION

A review of River Bend Condition Reports found past instances of poor reliability of the valve operating and position indicating mechanisms on the remotely operated manual valves in the RWCU system. The valves that were mispositioned in this event are of a new design, and were installed earlier this year. It could not be determined how the stops were damaged. No previous instances of misinterpreting valve position indication when performing local position verification were found.

SAFETY SIGNIFICANCE

The RWCU system is connected to the reactor coolant pressure boundary, and parts of the system are outside the primary containment. Its primary function is to maintain reactor water chemistry within specifications. The isolation circuitry and containment isolation valves are designed to isolate the containment boundaries in the system to mitigate the effects of a postulated pipe break outside containment. The isolation circuitry and containment isolation valves performed as designed. The shutdown of the RWCU system had no immediate adverse effect on plant operation, and it was restored to service later the same day. Reactor coolant chemistry remained within the limits of Technical Specifications while the system was out of service. The diverted system flow was contained within the demineralizer backwash receiving tank, which is inside the primary containment. This event had minimal potential to affect the health and safety of the public.

(Note: Energy industry component identification codes are annotated in the text as (**XXX**).)