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Rick J. King
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June 25, 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 / 03-003-01

File Nos. G9.5, G9.25.1.3

RBG-46137
RBF1-03-0106

Ladies and Gentlemen:

In accordance with 10CFR50.73, enclosed is the subject Licensee Event Report. This report is a supplement to LER 50-458 / 03-003-00, dated May 9, 2003. Revisions are indicated by change bars in the right margin. There are no commitments in this document.

Sincerely,

A handwritten signature in cursive script, appearing to read "Rick J. King".

RJK/dhw
enclosure

IE22

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cc: U. S. Nuclear Regulatory Commission
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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 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-8 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bis1@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)

Primary Containment Airlock Breach Due to Door Interlock Malfunction

EVENT DATE (6)			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
03	10	2003	2003	003	01	06	25	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)		87%	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)		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	
			20.2203(a)(2)(iii)		50.46(a)(3)(ii)		X 50.73(a)(2)(v)(C)		Specify in Abstract below or in	
			20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		NRC Form 366A	
			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
B	NH	DR	W.J.Wooley	YES					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 10, 2003, at approximately 11:37 a.m. CST, the airlock door interlocks on the 171 foot elevation of the primary containment did not properly function, such that both the inner and outer doors were unsealed for a period of approximately 36 minutes. At the time, the reactor was operating at 87 percent power in end-of-cycle coastdown. This event is being reported in accordance with 10CFR50.73(a)(2)(v)(c) as a condition that could have prevented the primary containment from performing its safety function. The most likely cause was a misadjustment of the mechanical interlock cables and / or excessive machining of the interlock cam ratchet. An engineering evaluation determined that the deflation of both airlock door seals had an insignificant impact on core damage frequency and large early release frequency. Thus, this event was of minimal significance with respect 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 CONDITION

On March 10, 2003, at approximately 11:37 a.m. CST, the airlock door (**DR**) interlocks on the 171 foot elevation of the primary containment did not properly function, such that both the inner and outer doors were unsealed for a period of approximately 36 minutes. At the time, the reactor was operating at 87 percent power in end-of-cycle coastdown. This event is being reported in accordance with 10CFR50.73(a)(2)(v)(c) as a condition that could have prevented the primary containment from performing its safety function.

INVESTIGATION AND IMMEDIATE CORRECTIVE ACTION

The River Bend primary containment is equipped with two personnel airlocks that allow routine access to the building. The airlocks were originally manufactured by the W. J. Wooley Co. (model no. 33021 for the 171' airlock). The design has since been acquired by Trentec, Inc. The airlocks consist of inner and outer doors separated by a barrel section. The doors are each equipped with double pneumatic seals. An interlock system, containing independent mechanical and electrical components, is designed to maintain the containment function by preventing both doors from being opened simultaneously. Operating handwheels on each door have an "open" and "closed" position, as well as an intermediate "equalize" position that opens a valve across the door boundary and deflates the seals in preparation for opening the door.

At 11:37 a.m., an annunciator in the main control room indicated that the pneumatic seals on both doors in the airlock were deflated. (The annunciator has a five minute delay time to prevent spurious alarms during routine operation of the airlocks, thus the condition had already existed for that time.) An Operator was dispatched to investigate. At 11:45, he reported that the operating handwheel on each door was blocked out of the "closed" position by the interlocks. The doors could be closed and latched, however, the condition of the interlocks prevented inflation of the seals on either door. Maintenance and Engineering personnel were contacted for assistance, and found that the interlock mechanisms had failed. The electrical interlock on one door was bypassed, and at 12:08 p.m., both doors were again closed with the seals inflated, restoring the safety function of the airlock.

Prior to the airlock failure, a contract employee was attempting to exit the containment building. Before he moved the inner door handwheel, he checked the indicator lights that show the status of the doors and seals. However, he did not look through the door sightglass to see that other persons were inside the airlock. One of the persons inside the airlock began to operate the handwheel on the outer door. The person at the inner door, seeing the green light indication and without looking through the sightglass, began simultaneously turning the handwheel on the inner door.

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

The person on the outer door reached "equalize" position first. Alarm sequence report data indicates that the person at the inner door reached the "equalize" position closely thereafter. As the person at the outer door began to turn the handwheel, the electrical interlock apparently malfunctioned and delayed its actuation long enough for the inner door handwheel to be turned to the "equalize" position. Debris was later found on the microswitch that actuates the electrical interlock, causing the microswitch (**33**) to momentarily stick. The microswitch was cleaned and lubricated.

As the person at the inner door began to turn the handwheel, its electrical interlock mechanism actuated normally, locking the handwheel on the outer door out of the "closed" position, since the individual at the outer door had paused at the "equalize" position to allow the seals to deflate. The mechanical interlock mechanism should have immobilized the inner door handwheel in the "closed" position as the outer door handwheel was turned. The mechanical interlock mechanism malfunctioned, so that the inner door handwheel was able to be turned past the point where the interlock pawl could have stopped the rotation. Subsequent inspection found that the mechanical interlock mechanism, activated by the outer door, did not actuate at the point in rotation that should have engaged the interlock. As the inner door hand wheel was turned, the mechanical interlock appeared to operate normally. However, the outer door handwheel was already at "equalize" position so the cam gear teeth that immobilize the hand wheel were out of position, rendering the interlock ineffective. This created the condition the Operator found when he arrived to investigate the alarms.

The electrical interlock was cleaned and the mechanical interlock was adjusted to ensure proper engagement and function. The post maintenance and surveillance tests were performed satisfactorily and the door was returned to service prior to the refueling outage. Following the refueling outage, an additional detailed inspection of the mechanical and electrical interlock components was performed. The mechanical interlock cam was replaced, and the mechanical cables were adjusted. The airlock surveillance test was then performed to verify operability of the interlocks.

CAUSAL ANALYSIS

The most likely cause was a misadjustment of the mechanical interlock cables and / or excessive machining of the interlock cam ratchet during previous corrective maintenance. This apparently caused the mechanical interlock to fail to actuate within the required arc of motion of the handwheel on the inner door.

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

A contributing factor was the test methodology used to verify operability of the airlock following maintenance. The surveillance test procedure directed that each door, in turn, be fully opened prior to testing the opposite handwheel. The procedure did not verify the ability of the mechanical interlock to actuate correctly in the event of near-simultaneous movement of the handwheels combined with the previously discussed condition of the cam ratchet and cables. Though these conditions are not likely to occur simultaneously, an improvement has been made to the procedure.

CORRECTIVE ACTION TO PREVENT RECURRENCE

The airlock surveillance test procedure has been revised to increase the sensitivity of the test and make it capable of detecting any similar misadjustment of the interlock cables or excessive cam ratchet wear.

PREVIOUS OCCURRENCE EVALUATION

A review of Licensee Event Reports since January 1996 found no records of a similar event.

SAFETY SIGNIFICANCE

An engineering evaluation determined that the deflation of both airlock door seals had an insignificant impact on core damage frequency and large early release frequency. Thus, this event was of minimal significance with respect to the health and safety of the public.

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