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Eric W. Olson
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RBG-47640

January 18, 2016

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

Subject: Licensee Event Report 50-458 / 2015-007-00
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

RBF1-16-0001

Dear Sir or Madam:

In accordance with 10 CFR 50.73, enclosed is the subject Licensee Event Report. This document contains no commitments. If you have any questions, please contact Mr. Joseph Clark at 225-381-4177.

Sincerely,

Eric W. Olson

EWO / dhw

Enclosure

cc: U. S. Nuclear Regulatory Commission
Region IV
1600 East Lamar Blvd.
Arlington, TX 76011-4511

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

IE22
NRR

INPO
(via ICES reporting)

Central Records Clerk
Public Utility Commission of Texas
1701 N. Congress Ave.
Austin, TX 78711-3326

Department of Environmental Quality
Office of Environmental Compliance
Radiological Emergency Planning and Response Section
Ji Young Wiley
P.O. Box 4312
Baton Rouge, LA 70821-4312

NRC FORM 366 (02-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@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 Page 2 for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Potential Loss of Safety Function of High Pressure Core Spray Due to Failure of Main Control Building Ventilation Chiller

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
11	17	2015	2015	- 007	- 00	01	18	2016		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 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)
10. POWER LEVEL	☐ 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)
71	☐ 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

LICENSEE CONTACT	TELEPHONE NUMBER *(Include Area Code)*
Joseph A. Clark, Manager - Regulatory Assurance	(225) 381-4177

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
n/a									

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☑ NO				

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

On November 17, 2015, at 11:55 p.m. CST, with the plant operating at 71 percent power, the high pressure core spray system (HPCS) was declared inoperable following the failure of the operating chiller in the Division 1 control building ventilation (HVK) system. HVK chiller "C" was in service when the building operator found a freon leak in the system. The leakage was determined to be of such magnitude as to cause the chiller to be inoperable, and the operators took action to shift the building cooling loads to the standby Division 2 chiller. Maintenance technicians disassembled the service water flow control valve on the chiller, and found that the cause of the freon leak was failed rubber diaphragm in the valve actuator. No positive identification of the failure mode of the diaphragm could be made, so it was shipped to the valve vendor for further analysis. This condition potentially caused the HPCS system to be incapable of performing its safety function, and is, thus, reportable in accordance with 10 CFR 50.73(a)(2)(v)(D). The maximum time needed to perform the chiller realignment has been conservatively estimated to be 76 minutes. Calculations have determined temperatures in the Division 3 equipment rooms will remain below the 122F limit of the equipment for at least 24 hours. This event had no actual adverse effect on the ability of the Division 3 HPCS electrical system to perform its design safety function since there was more than sufficient time to align the other chiller in the same division to provide control building switchgear room cooling.

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NARRATIVE

REPORTED CONDITION

On November 17, 2015, at 11:55 p.m. CST, with the plant operating at 71 percent power, the high pressure core spray system (HPCS) (BG) was declared inoperable following the failure of the operating chiller in the Division 1 control building ventilation (HVK)(VI) system. HVK chiller "C" was in service when the building operator found a freon leak in the system. The leakage was determined to be of such magnitude as to cause the chiller to be inoperable, and the operators took action to shift the building cooling loads to the standby Division 2 chiller.

The HVK system provides cooling to the equipment rooms housing the battery chargers and inverters for the safety-related onsite electrical distribution systems. The loss of redundant cooling to the various equipment rooms in the control building requires that the supported equipment in those areas be declared inoperable. The Technical Specifications for the Division 3 DC distribution system requires that the HPCS system be immediately declared inoperable. This condition potentially causes the HPCS system to be incapable of performing its safety function, and is, thus, reportable in accordance with 10 CFR 50.73(a)(2)(v)(D).

CAUSAL ANALYSIS

The HVK chillers reject building heat loads to the safety-related loop of the plant service water system. Each chiller (**CHU**) is equipped with a service water flow control valve (**FCV**) that regulates flow to maintain a relatively constant freon pressure. The flow control valve is automatically positioned by a mechanical actuator that uses freon pressure as its motive force. Maintenance technicians disassembled the valve, and found that the cause of the freon leak was failed rubber diaphragm. System engineers were unable to positively identify the failure mode of the diaphragm, so it was shipped to the valve vendor for further analysis.

CORRECTIVE ACTIONS to PREVENT RECURRENCE

Long-term corrective actions to prevent recurrence will be implemented as needed following receipt of the vendor's failure analysis.

PRIOR OCCURRENCE EVALUATION

No previous similar events have been reported at River Bend Station in the last three years.

SAFETY SIGNIFICANCE

Within the bounds of the site accident analysis, there is a plausible (albeit, highly unlikely) scenario in which a complete loss of offsite power occurs following an unrelated failure of the operating HKV chiller, concurrent with the assumed failure of the emergency diesel generator in the division opposite that of the failed chiller.

Each of the two divisions of the HVK system has two 100 percent capacity chillers. The chilled water and service water subloops are configured such that manual operator action is required to shift service between the two chillers within a division. In the normal alignment, one chiller is carrying the building heat loads, and one chiller in the opposite division is in standby, capable of automatically starting in the event that the running chiller fails.

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NARRATIVE

An unanticipated trip of an operating chiller automatically initiates the start sequence of the standby chiller. If the start of that standby chiller is closely followed by the loss of offsite power, the assumed subsequent failure of the diesel generator then leaves the HVK system with no chillers aligned for service. These circumstances would result in the failure of the cooling function of the HVK system until the operators take the manual actions. The maximum time needed to perform the realignment has been conservatively estimated to be 76 minutes. Calculations have determined temperatures in the Division 3 equipment rooms will remain below the 122F limit of the equipment for at least 24 hours.

In the event on November 17, approximately 46 minutes elapsed from the declaration of inoperability of the "C" chiller until the "D" chiller was placed into service. The HVK system continued to support the safety function of Division 3 electrical equipment after chiller trip, since the time required to restore an operable chiller is significantly less than the time limit for restoration of equipment room cooling. This event had no adverse effect on the ability of the Division 3 HPCS electrical system to perform its design safety function following the trip of a HVK chiller since there is more than sufficient time to align the other chiller in the same division to provide control building switchgear room cooling. This event, thus, did not constitute an actual loss of the ability of the HPCS system to perform its design safety function.

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