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OPPD
Omaha Public Power District
444 South 16th Street Mall
Omaha, NE 68102-2247

August 30, 2010
LIC-10-0078

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

Reference: Docket No. 50-285

Subject: Licensee Event Report 2010-004, Revision 0, for the Fort Calhoun Station

Please find attached Licensee Event Report 2010-004, Revision 0, dated August 30, 2010. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B).

No regulatory commitments are contained in this submittal. If you should have any questions, please contact me.

Sincerely,

Jeffrey A. Reinhart
Site Vice President

JAR/epm

Attachment

c: E. E. Collins, NRC Regional Administrator, Region IV
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Senior Resident Inspector
INPO Records Center

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORYCOMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hrs. 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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Fort Calhoun Station	05000285	1 OF 3

4. TITLE

Acoustic Monitor Failure Due to Inadequate Barriers for Protection of Cable

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
4	28	2010	2010	- 004 -	00	08	30	2010	FACILITY NAME	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)	X 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*)
Erick Matzke	402-533-6855

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

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*)

Flow Element (FE)-142, Accelerometer for Pressurizer Safety Valve RC-142 Flow Detection, failed its monthly surveillance test on May 26, 2010. One month earlier, on April 28, 2010, FE-142 had previously failed its monthly surveillance test. The failure of FE-142 on April 28, 2010, was identified in condition report (CR) 2010-2070. During the investigation for the May 26, 2010 failure, it was discovered that the direct cause for the earlier failure on April 28, 2010, was the same and had not been corrected. As a result of this discovery, FE-142 was reclassified as inoperable from April 28, 2010, to June 2, 2010, and the technical specification action time was exceeded. On June 30, 2010, the failure of FE-142 was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

The root cause of this event was that the hardline cable for the FE-142 accelerometer was allowed to have external stress applied because there were no barriers for the protection of the hardline cable during maintenance activities in the pressurizer cubicle. This allowed stress to be applied to the softline cable, which weakened the center conductor of the softline cable and caused the failure.

The softline cable was replaced making FE-142 operable. Other actions will be administered by the station's corrective action program.

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NARRATIVE

BACKGROUND

The Fort Calhoun Station (FCS) reactor coolant system (RCS) is equipped with two spring-loaded relief valves called primary (or code) safety valves which provide overpressure protection for the RCS. Code safety valve RC-141 has a 2485 pounds per square inch gauge (psig) (2500 pounds per square inch absolute (psia)) setting, and RC-142 has a 2530 psig (2545 psia) setting. In addition, the RCS is protected by two power operated relief valves (PORVs), PCV-102-1 and PCV-102-2.

A resistance temperature detector (RTD) is provided in the discharge pipe from each safety valve to give indication of valve leakage or lifting. The PORV pilot valve vent lines use a common pipe monitored by an RTD. Acoustic monitors provide indication of flow through valves PCV-102-1, PCV-102-2, RC-141, and RC-142. A piezoelectric (PE) accelerometer is mounted on each tail pipe. A noise generator is used on the tail pipe of the PORVs for testing the sensors. The acoustic monitors are the best indicator of flow through PORVs or safety valves.

Technical Specification (TS) 2.15, Instrumentation and Control Systems, states, in part:

The operability, permissible bypass, and Test Maintenance and Inoperable bypass specifications of the plant instrument and control systems shall be in accordance with Tables 2-2 through 2-5.

(4) In the event the number of channels of those particular systems in service not described in (3) above falls below the limits given in the columns entitled "Minimum Operable Channels" or "Minimum Degree of Redundancy," except as conditioned by the column entitled "Permissible Bypass Conditions," the reactor shall be placed in a hot shutdown condition within 12 hours. If minimum conditions for engineered safety features or isolation functions are not met within 24 hours from time of discovering loss of operability, the reactor shall be placed in a cold shutdown condition within the following 24 hours.

TS TABLE 2-5 “Instrumentation Operating Requirements for Other Safety Feature Functions,” reads, in part:

No.	Functional Unit	Minimum Operable Channels	Minimum Degree of Redundancy	Permissible Bypass Condition
1	CEA Position Indication Systems	1	None	None
2	Pressurizer Level	1	None	Not Applicable
3	PORV Acoustic Position Indication-Direct	1(a)(c)	None	Not Applicable
4	Safety Valve Acoustic Position Indication	1(a)(c)	None	Not Applicable
5	PORV/Safety Valve Tail Pipe Temperature	1(d)(b)	None	Not Applicable

NOTES:

a One channel per valve.

b One RTD for both PORV's; two RTD's, one for each code safety.

c If item 5 is operable, requirements of specification 2.15 are modified for items 3 and 4 to "Restore inoperable channels to operability within 7 days or be in hot shutdown within 12 hours."

d If items 3 and 4 are operable, requirements of specification 2.15 are modified for item 5 to "Restore inoperable channels to operability within 7 days or be in hot shutdown within 12 hours."

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NARRATIVE

EVENT DESCRIPTION

FE-142, Accelerometer for Pressurizer Safety Valve RC-142 Flow Detection, failed its monthly surveillance test, IC-ST-RC-0001, "Functional Test of Acoustic Flow Monitors," on May 26, 2010. The surveillance test failure occurred during performance of Section 7.2.1; verify response at FE-142. In this section, FE-142 showed no response as the impactor was operated. One month earlier, on April 28, 2010, FE-142 had also failed its monthly surveillance test, IC-ST -RC-0001. The surveillance test failure also occurred during performance of Section 7.2.1, in that, FE-142 showed no response as the impactor was operated. The failure of FE-142 on April 28, 2010, was identified in condition report (CR) 2010-2070. During the investigation for the May 26, 2010 failure, it was discovered that the direct cause for the earlier failure on April 28, 2010, was the same and had not been corrected. As a result of this discovery, FE-142 was reclassified as inoperable from April 28, 2010, to June 2, 2010, and the TS action time was exceeded. On June 30, 2010, the failure of FE-142 was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B). This LER is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B).

CONCLUSION

A root cause analysis was completed that determined that the failure of FE-142 was caused by the failure of the center conductor of the softline cable connecting the charge converter to the hardline cable. The reason for this failure was that external stress when the hardline cable was pulled was applied to the softline cable. The exact time and circumstance this stress was applied could not be determined, but there are two possible scenarios:

- The hardline cable was inadvertently snagged during a containment walkdown during the plant shutdown in April 2010, or
- The hardline cable had previously been snagged or pulled which weakened the center conductor of the softline cable, and finally caused the failure prior to the completion of IC-ST-RC-0001 on April 29, 2010.

In either case, the root cause of this event was that the hardline cable for the FE-142 accelerometer was allowed to have external stress applied because there were no barriers for the protection of the hardline cable during maintenance activities in the pressurizer cubicle. This allowed stress to be applied to the softline cable, which weakened the center conductor of the softline cable and caused the failure.

CORRECTIVE ACTIONS

The softline cable was replaced making FE-142 operable. Other actions will be administered by the station's corrective action program.

SAFETY SIGNIFICANCE

The acoustic monitors are only one of several methods the operators use to determine if a PORV or safety valve is open or leaking. Since there are other methods of monitoring the status of the safety valves and PORVs, this event had no impact on the health or safety of the public.

SAFETY SYSTEM FUNCTIONAL FAILURE

This event does not result in a safety system functional failure in accordance with NEI-99-02.

PREVIOUS SIMILAR EVENTS

The station has not had any similar failure of the acoustic monitors in the past.