



Omaha Public Power District

444 South 16<sup>th</sup> Street Mall  
Omaha, NE 68102-2247

LIC-11-0059  
June 17, 2011

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

Reference: Docket No. 50-285

**Subject: Licensee Event Report 2011-007, Revision 0, for the Fort Calhoun Station**

Please find attached Licensee Event Report 2011-007, Revision 0, dated, June 17, 2011. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B). If you should have any questions, please contact me.

Sincerely,

Jeffrey A. Reinhart  
Site Vice President

JAR/epm

Attachment

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

**LICENSEE EVENT REPORT (LER)**(See reverse for required number of  
digits/characters for each block)

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 Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects.resource@nrc.gov](mailto: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.

**1. FACILITY NAME**

Fort Calhoun Station

**2. DOCKET NUMBER**

05000285

**3. PAGE**

1 OF 3

**4. TITLE**

Violation of Technical Specifications due to Reactor Coolant System Boundary Leakage

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
4	12	2011	2011	- 007	- 0	6	17	2011	FACILITY NAME	DOCKET NUMBER 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)			
5	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME

Erick Matzke

TELEPHONE NUMBER (Include Area Code)

402-533-6855

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

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

On April 12, 2011, during the performance of an inspection of Reactor Coolant Pump (RCP), RC-3C, and its studs, a small boric acid leak was discovered. The leak was on a 3/4 inch nominal diameter stainless steel pipe welded to the pump upstream of isolation valve RC-270 (RC-3C, Reactor Coolant Pump Casing Gasket Leak Detection Pressure Indication Alarm PIA-3195 Root Valve). The pipe connects the area between the inner and outer gaskets on the reactor coolant pump casing to a pressure indicator alarm. The pipe had a through-wall crack. On May 30, 2011, it was determined that the failure of the pipe violated technical specifications for zero pressure boundary leakage.

The root cause of the crack was transgranular stress corrosion cracking (TGSCC) caused by a post-manufacturing bend in a susceptible material that was in a corrosive environment.

The affected pipe was replaced. Equivalent indicator piping for the other three RCPs was inspected and one of those lines was also replaced due to an unacceptable bend in the pipe. The line was evaluated for TGSCC and no indications were found. Associated instrument lines for the RCPs were evaluated and no susceptibility to TGSCC was noted.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fort Calhoun Station	05000285	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 3
		2011	- 007	- 0	

**NARRATIVE**

**BACKGROUND**

Fort Calhoun Station (FCS) Technical Specification (TS) 2.1.4, "Reactor Coolant System Leakage Limits," states, in part:

"To assure safe reactor operation, the following limiting conditions of the reactor coolant system leakage rates must be met:

(1) RCS operational LEAKAGE shall be limited to:

- a. No Pressure Boundary LEAKAGE,
- b. 1 gpm unidentified LEAKAGE,
- c. 10 gpm identified LEAKAGE,
- d. 150 gallons per day primary to secondary LEAKAGE through any one steam generator (SG).

(2) If RCS operational LEAKAGE limits of (1), above, are not met for reasons other than Pressure Boundary LEAKAGE or primary to secondary LEAKAGE, then reduce LEAKAGE to meet limits within 4 hours.

(3) If the Required Action and associated completion time of (2), above, is not met, OR Pressure Boundary LEAKAGE exists, or primary to secondary LEAKAGE is not within limits, then be in MODE 3, Hot Shutdown, within 6 hours AND be in MODE 4, Cold Shutdown, within 36 hours."

**EVENT DESCRIPTION**

On April 12, 2011, during the performance of an inspection of Reactor Coolant Pump (RCP), RC-3C, and its studs, a small boric acid leak was discovered. The leak was on a 3/4 inch nominal diameter stainless steel pipe welded to the pump upstream of isolation valve RC-270 (RC-3C, Reactor Coolant Pump Casing Gasket Leak Detection Pressure Indication Alarm PIA-3195 Root Valve). The pipe connects the area between the inner and outer gaskets on the RCP casing to a pressure indicator alarm. The pipe had a through-wall crack. The pipe section was replaced.

The damaged section of pipe was analyzed by an independent vendor. The affected pipe is not in direct contact with the reactor coolant system. Since the pipe does not connect directly to the reactor coolant system, but to an area between the inner and outer gaskets on the RCP casing, it was not immediately apparent that the RCS pressure boundary was impacted. On May 30, 2011, it was determined that the failure of the pipe violated TS 2.1.4(1)a. for zero pressure boundary leakage. This report is being submitted per 10 CFR 50.73(a)(2)(i)(B).

**CONCLUSION**

A root cause analysis was performed to determine the cause of the crack found in RCP RC-3C gasket leak detection line. The root cause of the crack in the RCP RC-3C gasket leak detection line was transgranular stress corrosion cracking (TGSCC) caused by a post manufacturing bend in a susceptible material that is in a corrosive environment.

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**NARRATIVE**

**CORRECTIVE ACTIONS**

Immediate corrective actions include:

- The affected pipe was replaced.
- Equivalent indicator piping for the other three RCPs was inspected and one of the other three lines was also replaced. The other replaced line was evaluated for TGSCC and no indications of TGSCC were found.
- Associated instrument lines for the RCPs were evaluated and no susceptibility to TGSCC was noted.

In addition, FCS will analyze and develop periodic preventive maintenance (PM) tasks for TGSCC susceptible RCS piping. Additional PM tasks will be controlled by the station's work management program.

**SAFETY SIGNIFICANCE**

The configuration of the affected pipe required that the first RCP gasket fail before significant pressure is experienced by the pipe. The pipe is located in the containment building and any leakage would be confined within the containment structure. The pipe is stainless steel 3/4 inch nominal diameter. If the gasket were to fail, leakage would be limited by the close tolerances of the RCP seal surfaces that the fluid would have to traverse to get to the cracked pipe. The tight fit of the sealing surface would limit the leakage rate. Therefore, this event had no impact on the health and safety of the public.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

This event is a safety system functional failure as described in NEI-99-02, Regulatory Assessment Performance Indicator Guideline.

**PREVIOUS EVENTS**

FCS has not had any previous incidents of failure of the RCS pressure boundary violating this TS.