



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

LIC-13-0008  
January 31, 2013

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

References: 1. Docket No. 50-285  
2. Letter from the OPPD (Louis P. Cortopassi) to NRC (Document Control Desk), Licensee Event Report 2012-017, Revision 0, for the Fort Calhoun Station, dated September 24, 2012 (LIC-12-0142)

**Subject: Licensee Event Report 2012-017, Revision 1, for the Fort Calhoun Station**

Please find attached Licensee Event Report 2012-017, Revision 1, dated January 31, 2013. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D).

There are no new commitments being made in this letter:

If you should have any questions, please contact Terrence W. Simpkin, Manager, Site Regulatory Assurance, at (402) 533-6263.

Sincerely,

Louis P. Cortopassi  
Vice President and CNO

LPC/rjr

**Attachment**

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

**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**

Containment Valve Actuators Design Temperature Ratings Below those Required for Design Basis Accidents

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
07	26	2012	2012	017 - 1		01	31	2013	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 type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" 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	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)

While performing an extent of condition review associated with the adequacy of air operated equipment inside containment to withstand containment main steam line break (MSLB) and loss of coolant accident (LOCA) temperatures, it was discovered that the Reactor Coolant System (RCS) Loop 1A Charging Line Stop Valve, the RCS Loop 2A Charging Line Stop Valve, and the Pressurizer RC-4 Auxiliary Spray Inlet Valve have nitrile based elastomers used in the air filter regulator and actuator. The design temperature limit for the nitrile elastomers used in the valves is 180°F which is acceptable for the normal operating conditions inside Containment of 120°F. However, during the MSLB and LOCA accident the temperature inside Containment is analyzed to reach 370°F. Since these valves have both open and close functions supported by an air accumulator, failure of the nitrile based elastomers could prevent the valves from fulfilling their intended safety function.

The causal analysis did not determine why the nitrile elastomers were installed during original plant construction. However, it was determined that a procedural deficiency and human error resulted in the wrong type of elastomer material being used in the instrument air filter regulators when the air accumulators were added to the valves to support their safety function.

**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
		2012	- 017	- 1	

**NARRATIVE**

**BACKGROUND**

**System Description**

HCV-238 is the Reactor Coolant System (RCS) Loop 1A Charging Line Stop Valve. This valve performs an active safety function in the open and closed positions and fails open on loss of air. An air accumulator is provided to ensure that this valve can perform its closed safety function on loss of air for 25 hours. Failure of the nitrile elastomers during a design basis accident (DBA) would hinder the ability to prevent excessive RCS depressurization.

HCV-239 is the RCS Loop 2A Charging Line Stop Valve. This valve performs an active safety function in both the open and closed positions and fails open on loss of air. An air accumulator is provided to ensure that this valve can perform its closed safety function on loss of air for 25 hours. Failure of the nitrile elastomers during a DBA would hinder the valve's ability to perform a safety related function.

HCV-240 is the Pressurizer, RC-4 Auxiliary Spray Inlet Valve. This valve performs an active safety function in both the open and closed positions and fails closed on loss of air. An air accumulator is provided to ensure that this valve can perform its open safety function on loss of air for 25 hours. Failure of the nitrile elastomers during a DBA would hinder the valve's ability to perform a safety related function.

**EVENT DESCRIPTION**

While performing an extent of condition review of Condition Report (CR) 2012-05509, which questioned the adequacy of air operated equipment inside containment to withstand containment main steam line break (MSLB) and loss of coolant accident (LOCA) temperatures, it was discovered that valves HCV-238, HCV-239, and HCV-240 have nitrile based elastomers for the air filter regulator and actuator that may not be able to withstand Containment MSLB and LOCA temperatures. The design temperature limit for the nitrile elastomers used in the valves is 180°F which is acceptable for the normal operating conditions inside Containment of 120°F. However, during MSLB and LOCA accident the temperature inside Containment is analyzed to reach 370°F. Since these valves have both open and close functions, failure of the nitrile based elastomers could prevent the valves from fulfilling their intended safety function.

This condition is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(D), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

**CONCLUSION**

The causal analysis could not determine why the nitrile elastomers were installed during original plant construction. However, based on reviews of recent engineering changes (EC), it was determined that a procedural deficiency and human error resulted in the wrong type of elastomer material being used in the instrument air filter regulators and accumulators that were added to these valves. Procedure PED-GEI-60, Preparation Substitute Replacement Items, and the System Interaction Evaluation Checklist (PED-GEI-60.10 R15) used as part of the EC process were inadequate. They did not specifically address whether the material being used could handle DBA conditions. Additionally, the checklist was incorrectly completed as a result of technical inexperience and the reliance on a previously approved EC to model the current EC.

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**NARRATIVE**

**CORRECTIVE ACTIONS**

This condition was entered into the FCS corrective action program and the following actions were initiated:

- Replace the nitrile elastomers in valves HCV-238, HCV-239, and HCV-240 with acceptable material. Scheduled completion date is February 15, 2013.
- Revise EA02-004, Equivalency Evaluation for Fisher Series 67CF Filter Regulators, to make the design engineer aware that all design requirements must be evaluated for the equipment replaced. Scheduled completion date is February 22, 2013.
- Revise procedure PED-GEI-60 and applicable form(s) to require the Engineer to provide an evaluation of design and environmental conditions. This was completed January 15, 2013.
- Revise PED-GEI-60 to provide guidance that if an Engineering Analysis (EA) or a previous Substitute Replacement Item (SRI) is used as the core for a new SRI, the information must be verified for critical design characteristics and conditions. This was completed on January 15, 2013.
- Conduct departmental briefing, on human error trap and human performance tools, to ensure design engineering is aware of this error trap when performing SRIs per PED-GEI-60. This was completed on November 26, 2012.

**SAFETY SIGNIFICANCE**

HCV-238, HCV-239 and HCV-240 have a safety function in their non-failed position during a LOCA. HCV-238 and HCV-239 perform an active safety function in the closed position to facilitate the initiation of Hot Leg Injection during a LOCA. HCV-240 has an active safety function in the open position to allow Hot Leg Injection after a LOCA. Since these valves have safety functions, the failure of the nitrile based elastomers could have prevented the valves from fulfilling their intended function. However, FCS has not experienced any event that would have subjected this material to a temperature above the design temperature limit for the nitrile elastomers of 180°F.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

This event does result in a safety system functional failure in accordance with NEI-99-02.

**PREVIOUS EVENTS**

Nine LERs initiated since January 1, 2010, were identified with the same reporting criteria;

- 10 CFR 50.73(a)(2)(v)(D), Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

None of the LERs reviewed have the same underlying concern or reason of this event, such as the same root cause, failure, or sequence of events. However, the causal analyses are not complete for some of these LERs and may change this result. If so, those LERs will list this LER as a previous event.