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

LIC-13-0163
December 6, 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)
3. Letter from the OPPD (Louis P. Cortopassi) to NRC (Document Control Desk), Licensee Event Report 2012-017, Revision 1, for the Fort Calhoun Station, dated January 31, 2013 (LIC-13-0008)

Subject: Licensee Event Report 2012-017, Revision 2, for the Fort Calhoun Station

Please find attached Licensee Event Report 2012-017, Revision 2. This report is being submitted pursuant to 10 CFR 50.73(2)a)(i)(B), 10 CFR 50.73(a)(2)(ii)(B), 10 CFR 50.73(a)(2)(v)(B) and (D), 10 CFR 50.73(a)(2)(vii), and 10 CFR 50.73(a)(2)(ix)(A).

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: M. L. Dapas, NRC Regional Administrator, Region IV
J. M. Sebrosky, NRC Senior Project Manager
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Senior Resident Inspector

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013
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, 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	2. DOCKET NUMBER	3. PAGE
Fort Calhoun Station	05000285	1 OF 5

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 05000
07	26	2012	2012	017 -	2	12	6	2013	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	☐ 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)
0	☐ 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

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		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 July 26, 2012, while performing an extent of condition review associated with air operated valves (AOV), it was discovered that several valves had nitrile based elastomers used in the air filter regulator and actuator that may not be acceptable for harsh environment conditions. On September 6, 2012, it was also identified that due to a lack of documentation, the States terminal blocks associated with the AOV's control circuit may not be acceptable for harsh environment conditions. These were entered into the station's corrective action program as Condition Reports 2012-08621 and 2012-12739.

During design basis accidents, the limiting analysis temperature inside Containment is 374.2 degrees Fahrenheit (F). The design service temperature for the nitrile elastomers is 180 degrees F and the testing performed on the States terminal blocks did not bound the required accident conditions. Since these valves have both open and/or close functions, failure of the nitrile based elastomers or the States terminal blocks could prevent the valves from fulfilling their intended safety function.

A causal analysis was conducted and found that the station did not fully implement and or maintain the electrical equipment qualification program. This resulted in a lack of qualification documentation and equipment not qualified for expected design basis accident conditions.

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NARRATIVE

EVENT DESCRIPTION

On July 26, 2012, while performing an extent of condition review associated with air operated valves (AOV), it was discovered that several valves had nitrile based elastomers used in the air filter regulator and actuator that may not be acceptable for harsh environment conditions. On September 6, 2012, it was also identified that due to a lack of documentation, the States terminal blocks associated with AOV's control circuit may not be acceptable for harsh environment conditions. These were entered into the station's corrective action program as Condition Reports 2012-08621 and 2012-12739.

During design basis accidents, the limiting analysis temperature inside Containment is 374.2 degrees Fahrenheit (F). The design service temperature for the nitrile elastomers is 180 degrees F and the testing performed on the States terminal blocks did not bound the required accident conditions. Since these valves have both open and/or close functions, failure of the nitrile based elastomers or the States terminal blocks could prevent the valves from fulfilling their intended safety function.

Event Notification (EN) No. 47900 reported on May 4, 2012, contained two issues. One being an analysis issue of temperature dwell time reported in LER 2012-009 and a second of equipment not analyzed for the conditions which they may be subjected to during a design basis accident, the subject of this LER.

This condition was initially 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. Additional reporting criteria of 10 CFR 50.73(a)(2)(i)(B) any operation or condition which was prohibited by the plant's Technical Specifications, 10 CFR 50.73(a)(2)(ii) any event or condition that resulted in: (B) the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety, 10 CFR 50.73(a)(2)(v)(B): any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat, 10 CFR 50.73(a)(2)(vii) any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (B) remove residual heat; (C) control the release of radioactive material; or (D) mitigate the consequences of an accident, and 10 CFR 50.73(a)(2)(ix)(A) any event or condition that as a result of a single cause could have prevented the fulfillment of a safety function for two or more trains or channels in different systems that are needed to: (1) shut down the reactor and maintain it in a safe shutdown condition; (2) remove residual heat; (3) control the release of radioactive material; or (4) mitigate the consequences of an accident have been added. This was identified during FCS' review of the condition. The failure to identify all reporting criteria in LERs has been entered into the station's corrective action program as Condition Report 2013-12863.

CONCLUSION

A causal analysis reviewing the requirements of 10 CFR 50.49 was conducted and found that the station did not fully implement and or maintain the electrical equipment qualification program. This resulted in a lack of qualification documentation, unidentified impacted equipment, and expanded the plant areas to be considered as affected by an event.

The EEQ issues with the States terminal blocks and elastomers are associated with much of the same the same equipment. Either condition could have impacted the equipment's ability to function during an event. See Table 1 for a listing of equipment affected by these issues.

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NARRATIVE

The causal analysis found that Fort Calhoun Station's (FCS) responses to IE Bulletin 79-01B made inaccurate and simplifying assumptions, without supporting documentation, that compromised the validity and scope of the electrical equipment qualification (EEQ) program, ultimately resulting in the program being non-compliant with 10 CFR 50.49. This resulted in a lack of qualification documentation and equipment not qualified for expected design basis accident conditions. The causal analysis also found that the engineering change process created an unnecessary burden on the EEQ coordinator affecting the sustainability of the EEQ program.

CORRECTIVE ACTIONS

The equipment conditions were entered into the station's corrective action program and the States terminal blocks and elastomers that do not meet the EEQ program requirements are being replaced.

Fully implement the Engineering Analyses that forms the basis of the EEQ Program including the affected documents.

Revise all EEQ procedures such that all EEQ engineering activities are performed under the PED-QP-2, Configuration Change Control process.

SAFETY SIGNIFICANCE

The lack of a complete analysis and various EEQ hardware issues could have prevented safety related equipment from performing their safety function in the event of a design basis accident inside containment or a high energy line break outside of containment.

SAFETY SYSTEM FUNCTIONAL FAILURE

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

PREVIOUS EVENTS

Although the root or apparent causes identified in the following LERs are not identical, the condition identified in this report is closely related as it also resulted in components not being qualified for the expected accident environment. These were latent conditions that were recently identified and any corrective action from the previous events would not have prevented the reported condition.

LER 2012-002, Inadequate Qualifications for Containment Penetrations Renders Containment Inoperable, documents component qualification issues.

These two reports identify events that post-date the current event and are listed for completeness.

LER 2012-015, Electrical Equipment Impacted by High Energy Line Break Outside of Containment. Some components not included in EQ program resulting in some identified components not being qualified when required.

LER 2013-011, Inadequate Design for High Energy Line Break in Rooms 13 and 19 of the Auxiliary Building, documents piping in Rooms 13 and 19 either not previously considered in the high energy line break analysis or the analysis used an incorrect terminal end point.

NARRATIVE

Table 1

Equipment Tag	Description
HCV-238	REACTOR COOLANT SYSTEM LOOP 1A CHARGING LINE STOP VALVE
HCV-239	REACTOR COOLANT SYSTEM LOOP 2A CHARGING LINE STOP VALVE
HCV-864	CONTAINMENT SPRAY HEADER TO CHARCOAL FILTER INLET VALVE
HCV-240	PRESSURIZER RC-4 AUXILIARY SPRAY INLET VALVE
HCV-865	CONTAINMENT SPRAY HEADER TO CHARCOAL FILTER INLET VALVE
HCV-883A	CNTMT HYDROGEN ANALYZER VA-81B INLET INBOARD ISOLATION VALVE
HCV-1387A	STEAM GENERATOR RC-2B BLWD ISOLATION VALVE
HCV-1388A	STEAM GENERATOR RC-2A BLWD ISOLATION VALVE
HCV-24l	RC PUMPS RC-3A,B,C&D CONTROLLED BLEEDOFF INBOARD ISOLATION VLV
HCV-438A	RCP RC-3A-D LUBE OIL & SEAL CLRS CCW INLET INBOARD ISOLATION VLV
HCV-438B	RCP RC-3A-D LUBE OIL & SEAL CLRS CCW INLET OUTBOARD ISOLATION VLV
HCV-438C	RCP RC-3A-D LUBE OIL & SEAL CLRS CCW OUTLET INBOARD ISO VALVE
HCV-438D	RCP RC-3A-D LUBE OIL & SEAL CLRS CCW OUTLET OUTBOARD ISO VALVE
HCV-467A	DET WELL CLNG CLS VA-14A&B COMBINED CCW INLET HDR INBD ISOL VLV
HCV-467C	DET WELL CLNG CLS VA-14A&B COMBIND CCW OUTLET HDR INBD ISOL VLV
HCV-545	SAFETY INJECTION LEAKAGE TO WASTE DISPOSAL SYS ISOLATION VALVE
HCV-2916	SAFETY INJECTION TANK SI-6A FILL/DRAIN VALVE
HCV-2936	SAFETY INJECTION TANK SI-6B FILL/DRAIN VALVE
HCV-2956	SAFETY INJECTION TANK SI-6C FILL/DRAIN VALVE
HCV-2976	SAFETY INJECTION TANK SI-6D FILL/DRAIN VALVE
PCV-2909	SI LEAKAGE COOLER SI-4A OUTLET PRESSURE CONTROL VALVE
PCV-2929	SI LEAKAGE COOLER SI-4B OUTLET PRESSURE CONTROL VALVE
PCV-2949	SI LEAKAGE COOLER SI-4C OUTLET PRESSURE CONTROL VALVE
PCV-2969	SI LEAKAGE COOLER SI-4D OUTLET PRESSURE CONTROL VALVE
HCV-2603B	SI TANKS SI-6A-6D SUPPLY INBOARD ISOLATION VALVE
HCV-2604B	RCDT WD-I/PQT RC-S SUPPLY INBOARD ISOLATION VALVE
HCV-42SA	SI LKG CLRS SI-4A-D COMBINED CCW INLET HDR INBOARD ISOL VALVE
HCV-42SC	SI LKG CLRS SI-4A-D COMBINED CCW OUTLET HDR INBOARD ISOL VALVE
HCV-746A	CONTAINMENT PRESSURE RELIEF INBOARD ISOLATION VALVE
HCV-881	CONTAINMENT HYDROGEN PURGE INBOARD ISOLATION VALVE

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HCV-882	CONTAINMENT HYDROGEN PURGE INBOARD ISOLATION VALVE
PCV-742A	CONTAINMENT PURGE AIR OUTLET INBOARD ISOLATION VALVE
PCV-742C	CONTAINMENT PURGE AIR INLET INBOARD ISOLATION VALVE
TCV-202	REACTOR COOLANT SYSTEM LOOP 2A LETDOWN TEMPERATURE CONTROL VLV
HCV-2S04A	RC SAMPLE LINE CONTAINMENT ISOL VALVE (INSIDE)
HCV-2S06A	SG RC-2A SAMPLE CONTAINMENT ISOL VALVE (INSIDE)
HCV-2S07A	SG RC-2B SAMPLE CONTAINMENT ISOL VALVE (INSIDE)
PCV-742E	RADIATION MONITORING CABINET OUTLET INBOARD ISOLATION VALVE
PCV-742G	RADIATION MONITORING CABINET INLET INBOARD ISOLATION VALVE
HCV-1107A	STEAM GENERATOR RC-2A AUXILIARY FEEDWATER INLET VALVE
HCV-1107B	STEAM GENERATOR RC-2A AUXILIARY FEEDWATER INLET VALVE
HCV-1108A	STEAM GENERATOR RC-2B AUXILIARY FEEDWATER INLET VALVE
HCV-1108B	STEAM GENERATOR RC-2B AUXILIARY FEEDWATER INLET VALVE
HCV-2898A	CONTROL ROOM VENTILATION VA-46A CCW INLET VALVE
HCV-2898B	CONTROL ROOM VENTILATION VA-46A CCW OUTLET VALVE
HCV-2899A	CONTROL ROOM VENTILATION VA-46B CCW INLET VALVE
HCV-2899B	CONTROL ROOM VENTILATION VA-46B CCW OUTLET VALVE
HCV-2987	HPSI ALTERNATE HEADER ISOLATION VALVE
PCV-6680A-1	CONTROL ROOM FAN VA-63A SUCTION PRESSURE CONTROL VALVE
PCV-6680A-2	CONTROL ROOM FAN VA-64A DISCHARGE PRESSURE CONTROL VALVE
PCV-6680B-1	CONTROL ROOM FAN VA-63B SUCTION PRESSURE CONTROL VALVE
PCV-6680B-2*	CONTROL ROOM FAN VA-64B DISCHARGE PRESSURE CONTROL VALVE
YCV-1045A	MAIN STEAM LINE A AUXILIARY FEEDWATER PUMP FW-10 SUPPLY VALVE
YCV-1045B	MAIN STEAM LINE B AUXILIARY FEEDWATER PUMP FW-10 SUPPLY VALVE