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

LIC-13-0127
September 30, 2013

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

Reference: Docket No. 50-285

Subject: Licensee Event Report 2012-015, Revision 1, for the Fort Calhoun Station

Please find attached Licensee Event Report 2012-015, Revision 1. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(A), (B), (C) and (D), and 10 CFR 50.73(a)(2)(ix)(A)

No commitments are 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
Site Vice President and CNO
LPC/rjr/epm

Attachment
c: S. A. Reynolds, Acting NRC Regional Administrator, Region IV
J. M. Sebrosky, NRC Sr. Project Manager
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Sr. Resident Inspector

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

Electrical Equipment Impacted by High Energy Line Break Outside of Containment

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
09	16	2011	2012	- 015 -	1	10	02	2013	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

5

10. POWER LEVEL

0

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☒ 50.73(a)(2)(v)(A)
- ☒ 50.73(a)(2)(v)(B)
- ☒ 50.73(a)(2)(v)(C)
- ☒ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☒ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

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)*

On September 16, 2011, while reviewing a draft of the Master List Reconstitution for Electrical Equipment Qualification (EEQ) (EA-FC-08-011), Fort Calhoun Station (FCS) Engineering Department identified that some of the listed components located outside of containment may not be qualified for the environments where they are located. This was discovered during a comprehensive re-evaluation of potential high energy line breaks and radiological impacts outside containment initiated in response to issues identified by the station staff. This condition was identified when Fort Calhoun Station was shutdown and defueled.

The causal analysis identified a number of components located in auxiliary building rooms 4, 13, 21, 22, and 81 that should have been included in the EEQ program. This omission was determined to be the result of insufficient engineering rigor by the preparer and reviewer of the EEQ Program Basis Document.

The identified components are being qualified by additional analysis, replacement with qualified components, providing shielding or electrical isolation capabilities, or moving to the component to a location where EEQ is not required.

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NARRATIVE

BACKGROUND

Fort Calhoun Station (FCS) is a two-loop reactor coolant system of Combustion Engineering (CE) design.

EVENT DESCRIPTION

On September 16, 2011, while reviewing a draft of the Master List Reconstitution for Electrical Equipment Qualification (EEQ) (EA-FC-08-011), FCS Engineering Department identified that some of the listed components located outside of containment may not be qualified for the environments where they are located. This was discovered during a comprehensive re-evaluation of potential high energy line breaks and radiological impacts outside containment initiated in response to issues identified by the station staff. The condition was identified when FCS was shutdown and defueled.

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)(v) any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) shut down the reactor and maintain it in a safe shutdown condition; (B) remove residual heat; (C) control the release of radioactive material, 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.

Although the condition described in this LER was identified on September 16, 2011, it was not promptly investigated as a reportable condition. The station inappropriately concluded that reportability could be evaluated at a later date since current operating conditions were not challenged. The station also inappropriately concluded that the 60-day reporting criteria commenced when the event was determined to be reportable. A performance gap has been identified in performing reportability determinations, including late reportability determinations, and has been entered into the station's corrective action program as Condition Report 2012-03796.

CONCLUSION

The causal analysis identified a number of components that should have been included in the EEQ program. This omission was determined to be the result of insufficient engineering rigor by the preparer and reviewer of the EEQ Program Basis Document.

CORRECTIVE ACTIONS

The identified components are being qualified by additional analysis, replacement with qualified components, provided shielding or electrical isolation capabilities, or moving the component to a location where EEQ is not required. This will be completed prior to entering plant conditions requiring the equipment.

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NARRATIVE

SAFETY SIGNIFICANCE

The causal analysis concluded that non-compliant components potentially impacted the closure of the main steam isolation valves (MSIV). The applicable severe accident sequence is a main steam line break in Room 81, downstream of the MSIVs, with both MSIVs failing to close. Additionally, the causal analysis concluded that non-compliant components potentially impacted operation of the low pressure safety injection (LPSI) pumps by loss of suction or air intrusion, limiting the ability to supply borated water to the reactor coolant system during an accident. See Table 1 for affected equipment.

SAFETY SYSTEM FUNCTIONAL FAILURE

This event does result in a safety system functional failure in accordance with Nuclear Energy Institute, NEI-99-02, Regulatory Assessment Performance Indicator Guideline, Revision 6.

PREVIOUS EVENTS

Although the root or apparent causes identified in the following four 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.

LER 2012-009, Inoperable Equipment due to Lack of Environmental Qualifications, documents an analysis issue in containment.

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

LER 2012-017, Containment Valve Actuators Design Temperature Ratings Below those required for Design Basis Accidents, documents elastomer qualification issues inside and outside of containment.

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 HELB analysis or analysis that used an incorrect terminal end point.

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NARRATIVE

Table 1 – Potentially Affected Functions due to the Unqualified Equipment

Major Equipment Function	Equipment Tag Number	Input from EEQ MASTER LIST FOR ELECTRICAL EQUIPMENT QUALIFICATION	
		Function	Failure Mode Bases and Possible Effect on Safety Related Function
MSIVs	HCV-1041A-20C	Slow Opening DC SOV - is only energized when the MSIV is closed and until the MSIV reaches 74 degrees open. With the MSIV more than 74 degrees open, (HCV-1041A-20 is deenergized.	Its failure may jeopardize the MSIV function or position indication since its circuitry is part of the 125 VDC control circuitry that supplies EEQ MSIV indication and solenoid valves with no electrical (fuse) isolation.
	HCV-1042A-20C	Slow Opening DC SOV is only energized when the MSIV is closed and until the MSIV reaches 74 degrees open. With the MSIV more than 74 degrees open, HCV-1042A-20 is deenergized.	
	HCV-1041A-PB	This local test pushbutton is part of the DC circuitry for the test SOV (HCV-1041A-20B). However, its failure may jeopardize the MSIV function or position indication.	Its failure may jeopardize the MSIV function or position indication since its circuitry is part of the 125 VDC control circuitry that supplies EEQ MSIV indication and solenoid valves with no electrical (fuse) isolation.
	HCV-1042A-PB	The local test pushbutton is part of the DC circuitry for the test SOV (HCV-1042A-20B). However, its failure may jeopardize the MSIV function or position indication.	

MSLB = Main Steam Line Break, FWLB = Feedwater Line Break,
MSIV = Main Steam Isolation Valve, SOV = Solenoid Operated Valve,
EEQ = Electrical Equipment Qualification, USAR = Updated Safety Analysis Report, CQE = Critical Quality Element,

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NARRATIVE

Table 1 – Potentially Affected Functions due to the Unqualified Equipment (continued)

Major Equipment Function	Equipment Tag Number	Input from EEQ MASTER LIST FOR ELECTRICAL EQUIPMENT QUALIFICATION	
		Function	Failure Mode Bases and Possible Effect on Safety Related Function
LPSI Pumps A and B Suction Valves	PCS-2937	This pressure control switch is part of the DC control circuitry for HCV-2937. It must not fail to prevent spurious actuation to close the parent HCV when LPSI is required and must function to permit closing the parent valve, if required, for long-term core cooling (EOP Attachment 4)	Failure of the may result in spurious operation of the LPSI suction valves
	PCS-2947	This pressure control switch is part of the DC control circuitry for HCV-2947. It must not fail to prevent spurious actuation to close the parent HCV when LPSI is required and must function to permit closing the parent valve, if required, for long-term core cooling (EOP Attachment 4)	