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

LIC-13-0114
August 12, 2013

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

Reference: Docket No. 50-285

Subject: Licensee Event Report 2013-011, Revision 0, for the Fort Calhoun Station

Please find attached Licensee Event Report 2013-011, Revision 0. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B), 10 CFR 50.73(a)(2)(v), 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
Site Vice President and CNO

LPC/epm

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

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

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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Fort Calhoun Station	05000285	1 OF 4

4. TITLE
Inadequate Design for High Energy Line Break in Rooms 13 and 19 of the Auxiliary Building

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
06	13	2013	2013	011 -	0	08	12	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)	☐ 20.2203(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)	☐ 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)*

During review of the analyses for high energy line breaks two deficiencies were identified. On June 13, 2013, an unevaluated break in the steam supply to the auxiliary feedwater turbine inside Room 19 was identified. Subsequently, on June 14, 2013, a deficiency was identified with verifying that the Electrical Equipment Qualification (EEQ) Program met all the criteria for establishing pipe rupture locations in Room 13.

The Root Cause Analysis resulted in two causes. Fort Calhoun Station’s responses to IE Bulletin 79-01B made inaccurate and simplifying assumptions, without supporting documentation, that compromised the validity and scope of the EEQ Program, ultimately resulting in the program being non-compliant with 10 CFR 50.49. Additionally, the EEQ Program has unique processes that are not integrated into the Engineering Change Process and impacts the sustainability of the EEQ Program.

The required analyses will be performed, required modifications completed, and supporting documentation (including program documents) updated as required. EEQ procedures will be revised such that all EEQ engineering activities are performed under the Station's configuration change control process. Additional corrective actions will be implemented using the station's corrective action program.

NARRATIVE

BACKGROUND

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

In addition to two safety-related AFW pumps, FCS has one non-safety related auxiliary feedwater (AFW) pump capable of meeting system requirements with a diverse power source, diverse water supply, and diverse location.

EVENT DESCRIPTION

During review of the analyses for high energy line breaks two deficiencies were identified. On June 13, 2013, an unevaluated break in the steam supply to the AFW turbine inside Room 19 was identified. Subsequently, on June 14, 2013, a deficiency was identified with verifying that the Electrical Equipment Qualification (EEQ) Program met all the criteria for establishing pipe rupture locations in Room 13. The potential breaks at these excluded areas could result in environmental conditions more severe than currently analyzed.

Room 19

The analysis performed for the AFW steam supply in Room 19 assumed that the terminal end break was at the steam bypass valves in the steam supply to the AFW turbine. They were assumed shut. However, they are throttled open. Therefore, the turbine steam admission isolation valve should have been used as the terminal end in the analysis. This affects the operability of the motor driven AFW pump which is also in Room 19. There is also a potential for steam to migrate beyond Room 19 and affect the switchgear and battery rooms. This review is continuing.

Room 13

The original Atomic Energy Commission (AEC) High Energy Line Break (HELB) criterion defines high energy line break locations at terminal ends and at intermediate locations in the piping runs. High energy lines are defined as piping systems 1” and larger that operate with fluid conditions equal to or greater than 200°F or 275 psig.

NRC Generic Letter 87-11, “Relaxation in Arbitrary Intermediate Pipe Rupture Requirement” provided guidance for the elimination of intermediate pipe break locations, based on the update to NRC Branch Technical Position (BTP) Mechanical Engineering Branch (MEB) 3-1. Contained within this update to BTP MEB 3-1 was specific guidance on the design requirements that would need to be satisfied in order to exclude pipe break locations between the containment penetration and the first outboard isolation valve.

Station analyses, EA-FC-11-023, “Analysis Guideline for the Fort Calhoun Nuclear Plant HELB Outside Containment” and EA-FC-11-037, “Summary of Design Basis Reconstitution for High Energy Line Break (HELB) Outside of Containment in Response to CR 2007-3407” apply the MEB 3-1 criteria for break exclusion to eight (8) lines in Room 13 between the containment penetration and the first outboard isolation valve. Consistent with this approach, the HELB environmental analysis that was developed for EA-FC-11-037 does not address or define the environmental or dynamic effects of pipe breaks in these locations.

In Section 3.1.2.1 of EA-FC-11-037, “Internal Commitments” establishes a requirement for the eight piping sections to be part of the FCS ASME Section XI ISI Program for 100 percent volumetric in-service examination of all pipe welds as defined in IWA-2400. The affected piping sections are:

NARRATIVE

- Letdown line between M-2 to HCV-204
- Charging line between M-3 to CH-194
- Steam Generator Blowdown between M-10 to HCV-1387B
- Steam Generator Blowdown between M-13 to HCV-1388B
- Feedwater line between M-93 and HCV-1385
- Feedwater line between M-96 and HCV-1386
- Main Steam line between M-94 and HCV-1042A
- Main Steam line between M-95 and HCV-1041A

The main feedwater and main steam line break exemptions are not credited in the environmental analysis for high energy line breaks. However, the environmental analysis for the Letdown, Charging, and Steam Generator Blowdown lines presumes that these exemptions eliminate the need to postulate breaks in the vicinity of the containment penetrations.

The current analysis (EA-FC-11-037) does not demonstrate how the eight (8) lines meet all 7 criteria listed in MEB 3-1 (Rev 2) for exemption of a pipe rupture between the containment penetrations and the outboard isolation valve.

On June 13, 2013, the unevaluated condition of a potential for steam line break inside Room 19 was reported to the NRC Headquarters Operation Office (HOO) in Event Number (EN) 49112. On June 14, 2013, the deficiency that identified the criteria for excluding pipe rupture locations in Room 13 could not be validated was reported to the HOO in EN 49119. Both notifications were made under 10 CR 50.72(b)(3)(ii)(B), unanalyzed condition.

This written report is being submitted in accordance with:

- 10 CFR 50.73(a)(2)(ii)(B), any event or condition that results in the nuclear power plant being in an unanalyzed condition that significantly degrades plant safety,
- 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: (B) 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, 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: (2) Remove residual heat.

CONCLUSION

A previously completed Root Cause Analysis (RCA) for HELB identified two causes:

Fort Calhoun Station's responses to IE Bulletin 79-01B made inaccurate and simplifying assumptions, without supporting documentation, that compromised the validity and scope of the EEQ Program, ultimately resulting in the program being non-compliant with 10 CFR 50.49.

The Electrical Equipment Qualification Program has unique processes that are not integrated into the Engineering Change Process affecting the sustainability of the EEQ Program.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Fort Calhoun Station	05000285	2013	- 011 -	0	4 OF 4

NARRATIVE

CORRECTIVE ACTIONS

The required analyses will be performed, required modifications completed, and supporting documentation (including program documents) will be updated as required.

EEQ procedures will be revised such that all EEQ engineering activities are performed under the Station's configuration change control process.

Additional corrective actions will be implemented using the station's corrective action program.

SAFETY SIGNIFICANCE

FCS has analyzed for breaks between the containment penetration and the isolation valves for the main steam and main feedwater systems and there is no adverse consequence to plant safety or accident mitigation for a postulated main steam line break (MSLB) or feedwater line break (FWLB). However, due to an error in one analysis, there is a possibility of the loss of both safety-related AFW pumps in Room 19. FCS previously installed a third non-safety related diesel driven AFW pump which may be available to support the safety-related function. In Room 13 however, the exemption of breaks in the other smaller high energy piping systems (e.g. Letdown, Charging, and Steam Generator Blowdown) are not supported by existing analyses and could produce environmental effects that are more severe than currently analyzed in areas not bounded by the MSLB or FWLB analysis.

SAFETY SYSTEM FUNCTIONAL FAILURE

This issue does constitute a safety system functional failure in accordance with NEI 99-02, Revision 6.

PREVIOUS EVENTS

LERs 2012-009 and 2012-015 document similar equipment qualification events. The condition discussed in this LER was identified during the extent of condition from these previous events. As a result, any corrective action from the previous events would not have prevented this condition.