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

LIC-12-0187
December 18, 2012

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

Reference: Docket No. 50-285

Subject: Licensee Event Report 2012-012, Revision 1, for the Fort Calhoun Station

Please find attached Licensee Event Report 2012-012, Revision 1, dated December 18, 2012. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(D), and 10 CFR 50.73(a)(2)(vii)(D).

No commitments are being made in this letter.

If you should have any questions, please contact me.

Sincerely,

Louis P. Cortopassi
Vice President and CNO

LPC/rjr/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

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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
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4. TITLE

Multiple Safety Injection Tanks Rendered Inoperable

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
03	19	2012	2012	- 012 -	1	12	18	2012	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

☐ 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)*

Fort Calhoun Station (FCS) operating procedures allow filling and sluicing multiple safety injection tanks (SITs) while at power, rendering the SITs inoperable during the evolution. The use of this procedure allowed multiple safety injection tanks to be concurrently filled while FCS was at power. FCS Technical Specifications (TS) and accident analysis do not allow more than one SIT to be inoperable. This condition was identified on March 19, 2012, while the unit was in Mode 5, by the NRC during initial license examination preparation.

The cause of this condition was the failure to recognize that the passive design of the SITs cannot credit the use of active components for operability. The event was entered into the Corrective Action Program and the following corrective actions were taken. Operating Procedure OI-SI-1, the Technical Specification basis, and the Updated Safety Analysis Report have been revised to clearly state the SITs operability requirements.

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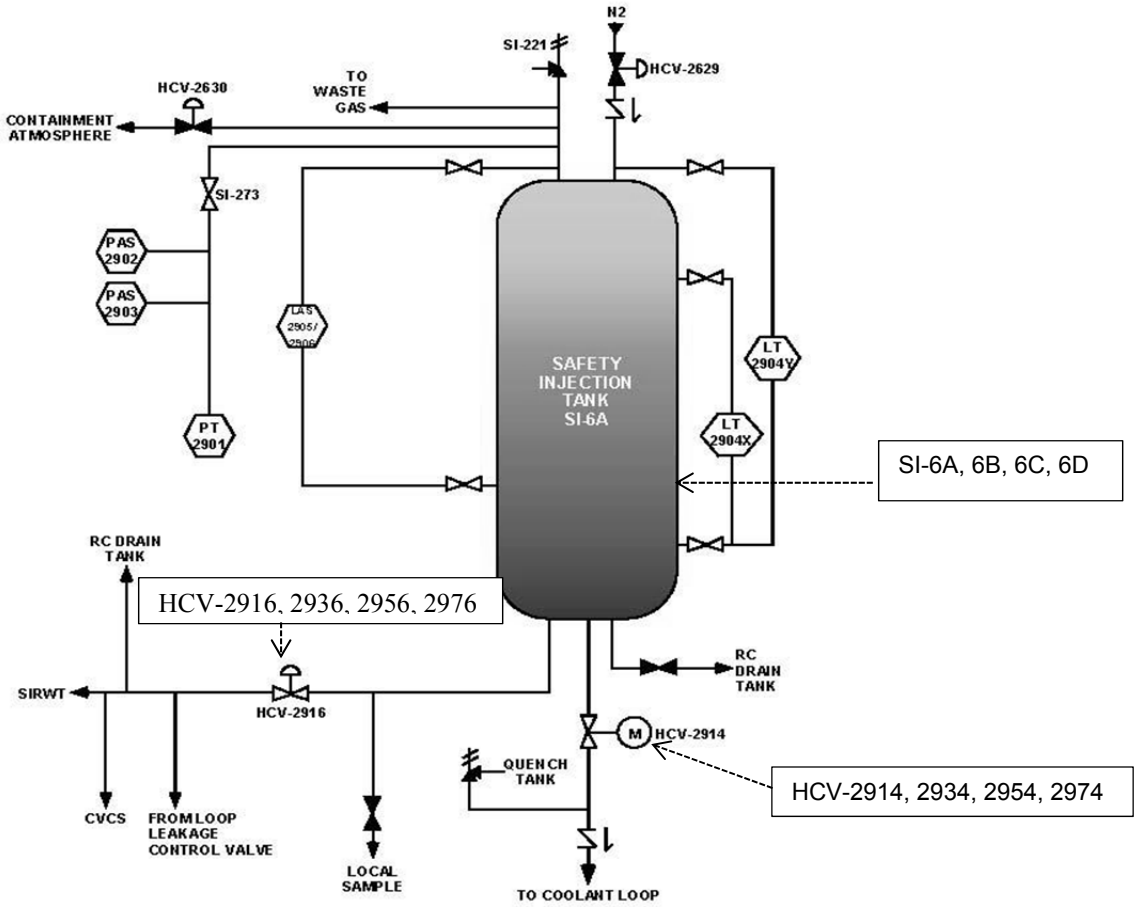
NARRATIVE

BACKGROUND

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

The FCS Updated Safety Analysis Report (USAR) Section 6.2.2, System Description, states that the safety injection system [BP] for this plant consists of both passive and active components. The four pressurized safety injection tanks (SITs) [6A, 6B, 6C, 6D] are of the passive type and require no outside power or safety injection actuation signal to operate. The SITs inject large quantities of borated water into the reactor coolant system (RCS) [AB] following a large pipe break. The water rapidly covers and cools the core, thereby limiting clad melting and metal water reaction. The separate and independent tanks are each connected to one of the four safety injection nozzles [NZL]; one nozzle is located on each of the four RCS cold legs. The driving head for water injection is provided by a nitrogen cover gas at a pressure of 240 pounds per square inch (psig) minimum. As the RCS pressure falls below tank pressure, check valves [V] open in the line connecting each tank to the system. Thus, these tanks will initiate their discharge when the RCS pressure drops below approximately 240 psig minimum. The figure below is provided to aid in understanding the event.



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NARRATIVE

FCS USAR Section 6.2.1, Design Bases, states that the system requirements during a Design Basis large break loss of coolant accident (LBLOCA) are met with the assumption of three of the four SITs delivering borated water to the core and with one high pressure safety injection (HPSI) pump [BQ] delivering approximately 75 percent of its rated flow to the core and one low-pressure safety injection (LPSI) pump delivering approximately 75 percent of its rated flow to the core.

Technical Specification (TS) Limiting Condition for Operation (LCO) 2.3, Emergency Core Cooling, Minimum Requirement (1)(c) requires that all four SITs are operable and pressurized to at least 240 psig and a maximum of 275 psig with tank level of at least 116.2 inches (67 percent) and a maximum level of 128.1 inches (74 percent) with refueling boron concentration. Minimum Requirement 1(ii) states that all valves, piping and interlocks associated with the above components and required to function during accident conditions are operable. Valves HCV-2914, 2934, 2954, and 2974 (SIT 6A, 6B, 6C and 6D outlet valves) shall have power removed from the motor operators by locking open the circuit breakers in the power supply lines to the valve motor operators. Valve FCV-326 (Shutdown Cooling Heat Exchangers AC-4A & 4B LPSI Bypass Flow Control Valve) shall be locked open. TS LCO 2.3 Modification of Minimum Requirements (2)f states that one safety injection tank may be inoperable for reasons other than g, [temperature/pressure] or h, [boron concentration] for a period of no more than 24 hours.

The normal at-power line-up for SIT-6A, 6B, 6C, and 6D is to have HCV-2914 [ISV], 2934, 2954, and 2974 locked open with power removed and to have HCV-2916, 2936, 2956, and 2976 (SIT 6A, 6B, 6C and 6D fill/drain valve) closed. Valves HCV-2916, 2936, 2956, and 2976 all receive an accident signal to automatically close.

EVENT DESCRIPTION

FCS operating procedures allow filling and sluicing multiple safety injection tanks (SITs) while at power. Since the filling operation requires opening the valves, (which receive a signal to close post accident), these valves would be required to close via electrical signals, which is not a passive feature. Since the tanks are credited as a passive feature, the opening of the valves could impact the tanks' passive design feature, hence rendering the SITs inoperable during the evolution. The use of this procedure allowed multiple SITs to be concurrently inoperable while FCS was at power. FCS TS and accident analysis do not allow more than one SIT to be inoperable. This condition was identified on March 19, 2012, while the unit was in Mode 5, by the NRC during initial license examination preparation.

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(D), and 10 CFR 50.73(a)(2)(vii)(D).

This LER reports a condition where multiple SITs could be filled, hence potentially rendering them inoperable using approved plant procedures. The initial Operation's review focused on the current operating conditions, noting that the condition would need to be resolved prior to start up. The station paradigm inappropriately concluded that reportability could be evaluated at a later date since current operating conditions were not challenged, and that the 60-day reporting window commenced when the event was determined to be reportable. FCS has been systematically addressing issues that have been identified since June 2011, in response to the flooding conditions, switchgear fire, and increased oversight. This LER is being submitted beyond the 60-day regulatory reporting requirement due to non-conservative decisions with respect to procedural and regulatory reportability requirements and resource constraints caused by the operating challenges which began in June 2011.

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NARRATIVE

CONCLUSION

The cause of this condition was the failure to recognize that the passive design of the SITs cannot credit the use of active components for operability.

CORRECTIVE ACTIONS

The event was entered into the Corrective Action Program and the following corrective actions were taken. Operating Procedure OI-SI-1, Safety Injection – Normal Operation, the TS Basis for TS 2.3, Emergency Core Cooling System, and the Updated Safety Analysis Report, Section 6.2, Engineered Safeguards Safety Injection System, have been revised to clearly state the SITs operability requirements.

SAFETY SIGNIFICANCE

The cross-connection of the SITs exposed the tanks to a diversion flow path. However, there is a high likelihood that if an event requiring SIT injection had occurred, the SITs being sluiced would have fulfilled their safety function. The valves used for sluicing, HCV-2916, 2936, 2956, and 2976, automatically isolate via a Safety Injection Actuation Signal (SIAS). Therefore, although crediting the use of the SIAS to close these valves is not consistent with the passive safety function of the SITs, the use of this flow path did not result in a loss of the SIT functionality. Additionally, there were only short periods of time (less than one hour at a time) during which multiple (two) SITs were cross-connected.

SAFETY SYSTEM FUNCTIONAL FAILURE

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

PREVIOUS EVENTS

None, however, 22 LERs initiated since January 1, 2010, were identified with the same reporting criteria;

- 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)(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, and
- 50.73(a)(2)(vii)(D), Any event where a single cause or condition caused two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident.

None of the LERs reviewed contained the same underlying concern or reason of this event, such as the same root cause, failure, or sequence of events.