



Omaha Public Power District

444 South 16<sup>th</sup> Street Mall

Omaha, NE 68102-2247

LIC-13-0050

April 23, 2013

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

Reference: Docket No. 50-285

**Subject: Licensee Event Report 2013-004, Revision 0, for the Fort Calhoun Station**

Please find attached Licensee Event Report 2013-004, Revision 0, dated April 23, 2013. This report is being submitted pursuant to 50.73(a)(2)(v)(A), (B), (C), and (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,

For  
Louis P. Cortopassi  
Site Vice President and CNO

LPC/epm/rjr

**Attachment**

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

<b>NRC FORM 366</b> (10-2010)	<b>U.S. NUCLEAR REGULATORY COMMISSION</b> APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013
<h2 style="margin: 0;">LICENSEE EVENT REPORT (LER)</h2> <p style="margin: 0;">(See reverse for required number of digits/characters for each block)</p>	

<b>1. FACILITY NAME</b> Fort Calhoun Station	<b>2. DOCKET NUMBER</b> 05000285	<b>3. PAGE</b> 1 OF 3
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<b>4. TITLE</b> Inverters Inoperable During Emergency Diesel Generator Operation
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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
2	22	2013	2013	004	- 0	04	23	2013		05000
										05000

<b>9. OPERATING MODE</b>  <div style="text-align: center; font-size: 24px;">5</div>	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> <i>(Check all that apply)</i>			
<b>10. POWER LEVEL</b>  <div style="text-align: center; font-size: 24px;">0</div>	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2201(d) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv) <input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1)(i)(A) <input type="checkbox"/> 50.36(c)(1)(ii)(A) <input type="checkbox"/> 50.36(c)(2) <input type="checkbox"/> 50.46(a)(3)(ii) <input type="checkbox"/> 50.73(a)(2)(i)(A) <input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(i)(C) <input type="checkbox"/> 50.73(a)(2)(ii)(A) <input type="checkbox"/> 50.73(a)(2)(ii)(B) <input type="checkbox"/> 50.73(a)(2)(iii) <input type="checkbox"/> 50.73(a)(2)(iv)(A) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(A) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(B) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(C) <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 50.73(a)(2)(vii) <input type="checkbox"/> 50.73(a)(2)(viii)(A) <input type="checkbox"/> 50.73(a)(2)(viii)(B) <input type="checkbox"/> 50.73(a)(2)(ix)(A) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71(a)(4) <input type="checkbox"/> 73.71(a)(5) <input type="checkbox"/> OTHER <small>Specify in Abstract below or in NRC Form 366A</small>

12. LICENSEE CONTACT FOR THIS LER	
FACILITY NAME <div style="text-align: center;">Erick Matzke</div>	TELEPHONE NUMBER <i>(Include Area Code)</i> <div style="text-align: center;">402-533-6855</div>

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

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input checked="" type="checkbox"/> YES <i>(If yes, complete 15. EXPECTED SUBMISSION DATE)</i> <input type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">MONTH</th> <th style="width: 33%;">DAY</th> <th style="width: 33%;">YEAR</th> </tr> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">31</td> <td style="text-align: center;">13</td> </tr> </table>	MONTH	DAY	YEAR	7	31	13
MONTH	DAY	YEAR					
7	31	13					

<b>ABSTRACT</b> <i>(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)</i>
<p>On February 22, 2013, while performing testing of the diesel generators in accordance with OP-ST-ESF-0002, the Ametek inverters "A" and "C," instrument bus "A" and "C" Low Voltage/Ground alarms came in and cleared repeatedly. A slight smell of smoke was detected by several personnel in the Control Room in the vicinity of AI-40A. The following equipment had failed and/or was damaged: LIC-2802, PIC-2802, A/PIA-102X, C-VOPT and possibly one or more of the CCW HX/RW temperature meters.</p> <p>Fort Calhoun had replaced the original Elgar inverters with new Ametek SCI inverters during the 2008 refueling outage. After installation continuing intermittent inverter trouble alarms and instrument bus low voltage/ground alarms occurred when loads are placed on or removed from various a-c buses. A design change completed in April of 2011 removed a ground connection between two capacitors in the inverters. However, testing of the modification was not completed before the 2011 flood and the station did not operate with the modification installed. A causal analysis is in progress and the results of the analysis will be published in a supplement to this LER.</p>

**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
		2013	- 004	- 0	

**NARRATIVE**

**BACKGROUND**

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

**Description of the 120-Volt a-c System Description**

The 120-Volt a-c system consists of four vital uninterruptable power supplies (UPS), each with a bypass regulated transformer; inverter, static switch and manual bypass switches, and a swing inverter. This UPS supplies power to vital instrument buses labeled A, B, C, and D. The inverters also are called by the same alphabetic letters and have corresponding tag numbers, EE-8H, EE-8J, EE-8K, and EE-8L, respectively. Swing inverters for the vital instrument buses have tag numbers EE-8T and EE-8U.

There is also a non-vital 120-Volt a-c system. It consists of two UPS's, each with a bypass regulated transformer, inverter, static switch and manual bypass switches, and a swing inverter. This UPS supplies power to non-vital instrument buses labeled 1 and 2. The inverters are called 1 and 2, and have tag numbers EE-8P and EE-8Q.

During normal operation, UPS A will supply vital AC bus A, UPS B will supply vital bus B, UPS C will supply vital bus C, and UPS D will supply vital bus D. Loads on the instrument buses will be supplied from the inverters through their static and bypass switches. In the event that one of the inverters should fail, its static switch will transfer to the "Bypass Source Supplying Load" position and the load will continue to operate uninterrupted.

The swing inverter is normally operated in an "off" state. One swing UPS can power either vital bus A or C while the other swing UPS can power either bus B or D when maintenance is performed on an inverter. When transferring loads between either "A" or "C" UPS, and the swing UPS, proper synchronizing must be maintained between the systems.

There is a six year history of Control Room alarms associated with Inverters "A", "B", "C", and "D" when Diesel Generator testing is conducted with Ametek SCI inverters (that replaced the Elgar inverters in 2008). Inverter Trouble alarms and Instrument Bus Low Voltage/ Ground alarms also occur when loads are placed on or removed from various a-c buses.

**EVENT DESCRIPTION**

On February 22, 2013, while performing testing of diesel generators in accordance with OP-ST-ESF-0002, the Ametek inverters "A" and "C," instrument bus "A" and "C" Low Voltage/Ground alarms came in and cleared repeatedly. A slight smell of smoke was detected by several personnel in the Control Room in the vicinity of AI-40A. The following equipment had failed and/or was damaged: LIC-2802, PIC-2802, A/PIA-102X, C-VOPT and possibly one or more of the CCW HX/RW temperature meters. This condition/event was entered in to the corrective action program.

Fort Calhoun had replaced the original Elgar inverters with new Ametek SCI inverters during the 2008 refueling outage. After installation continuing intermittent inverter trouble alarms and instrument bus low voltage/ground alarms occurred when loads are placed on or removed from various a-c buses. A design change completed in April of 2011 removed a ground connection between two capacitors in the inverters. However, testing of the modification was not completed before the 2011 flood and the station did not operate with the modification installed. A causal analysis is in progress and the results of the analysis will be published in a supplement to this LER.

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**NARRATIVE**

On February 24, 2013, it was determined that the inverter frequency range was not compatible with diesel frequency range and an eight (8) hour report was made under 10 CFR 50.72 (b)(3)(ii)(B) to the NRC Headquarters Operation Office (HOO) at 1401 CST (Event Number (EN) 48781). This report is being submitted in accordance with 50.73(a)(2)(v)(A), (B), (C), and (D).

**CONCLUSION**

A causal analysis is in progress. The results of the analysis will be published in a supplement to this LER.

**CORRECTIVE ACTIONS**

A causal analysis is in progress. The results of the analysis will be published in a supplement to this LER

**SAFETY SIGNIFICANCE**

A causal analysis is in progress. The results of the analysis will be published in a supplement to this LER.

**SAFETY SYSTEM FUNCTIONAL FAILURE**

A causal analysis is in progress. The results of the analysis will be published in a supplement to this LER.

**PREVIOUS EVENTS**

A causal analysis is in progress. The results of the analysis will be published in a supplement to this LER.