



Fort Calhoun Station  
9610 Power Lane  
Blair, NE 68008

June 4, 2010  
LIC-10-0041

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

Reference: Docket No. 50-285

**Subject: Licensee Event Report 2010-002 Revision 0 for the Fort Calhoun Station**

Please find attached Licensee Event Report 2010-002, Revision 0, dated June 4, 2010. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(A). No regulatory commitments are contained in this submittal.

If you should have any questions, please contact me.

Sincerely,

Jeffrey A. Reinhart  
Site Vice President  
Fort Calhoun Station

JAR/epm

Attachment

c: E. E. Collins, NRC Regional Administrator, Region IV  
L. E. Wilkins, NRC Project Manager  
J. C. Kirkland, NRC Senior Resident Inspector  
INPO Records Center

**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 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@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**

Fort Calhoun Station

**2. DOCKET NUMBER**

05000285

**3. PAGE**

1 OF 3

**4. TITLE**

Failed Feeder Cable Due to Inadequate Procedure Causes Station Shutdown

**5. EVENT DATE**

MONTH	DAY	YEAR
4	8	2010

**6. LER NUMBER**

YEAR	SEQUENTI AL NUMBER	REV NO
2010	- 002 -	00

**7. REPORT DATE**

MONTH	DAY	YEAR
6	4	2010

**8. OTHER FACILITIES INVOLVED**

FACILITY NAME	DOCKET NUMBER
	05000

**9. OPERATING MODE**

1

**10. POWER LEVEL**

100

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

- |   |   |   |  |
|---|---|---|--|
| <input type="checkbox"/> 20.2201(b)         | <input type="checkbox"/> 20.2203(a)(3)(i)             | <input type="checkbox"/> 50.73(a)(2)(i)(C)  | <input type="checkbox"/> 50.73(a)(2)(vii)        |
| <input type="checkbox"/> 20.2201(d)         | <input type="checkbox"/> 20.2203(a)(3)(ii)            | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A)    |
| <input type="checkbox"/> 20.2203(a)(1)      | <input type="checkbox"/> 20.2203(a)(4)                | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B)    |
| <input type="checkbox"/> 20.2203(a)(2)(i)   | <input type="checkbox"/> 50.36(c)(1)(i)(A)            | <input type="checkbox"/> 50.73(a)(2)(iii)   | <input type="checkbox"/> 50.73(a)(2)(ix)(A)      |
| <input type="checkbox"/> 20.2203(a)(2)(ii)  | <input type="checkbox"/> 50.36(c)(1)(ii)(A)           | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x)          |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2)                  | <input type="checkbox"/> 50.73(a)(2)(v)(A)  | <input type="checkbox"/> 73.71(a)(4)             |
| <input type="checkbox"/> 20.2203(a)(2)(iv)  | <input type="checkbox"/> 50.46(a)(3)(ii)              | <input type="checkbox"/> 50.73(a)(2)(v)(B)  | <input type="checkbox"/> 73.71(a)(5)             |
| <input type="checkbox"/> 20.2203(a)(2)(v)   | <input checked="" type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C)  | <input type="checkbox"/> OTHER                   |
| <input type="checkbox"/> 20.2203(a)(2)(vi)  | <input type="checkbox"/> 50.73(a)(2)(i)(B)            | <input type="checkbox"/> 50.73(a)(2)(v)(D)  | Specify in Abstract below<br>or in NRC Form 366A |

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME

Erick Matzke

TELEPHONE NUMBER (include Area Code)

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
D	EA	CBL5	Rock- bestos	Y					

**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)

At 0238 Central Daylight Time (CDT) on April 8, 2010, a ground alarm for 480 Volt Bus 1B3A was indicating intermittently. The process of isolating loads on the Motor Control Center (MCC) required securing power to main feedwater isolation valve HCV-1385. Technical Specification (TS) 2.0.1 was entered at 1622 CDT due to HCV-1385 being inoperable. At 1740 CDT, insulation on the supply feeder cables to MCC-3A1 was found to be degraded, and the phase 2 feeder cable was shorted to ground. A plant shutdown was commenced at 1740 CDT per the normal shutdown procedure. At 2123 CDT, the reactor was manually tripped from 22 percent reactor power per the normal shutdown procedure. All systems functioned properly. At 2123 CDT, the plant entered Mode 3. At 2233 CDT, HCV-1385 was manually closed and TS 2.6.1(1) was exited.

The root cause analysis determined that the guidance in procedure EM-PM-EX-1100, "480 Volt Motor Control Center Maintenance," is inadequate to ensure that MCC-3A1 feeder cable lugs are properly torqued to the cables. This led to the high resistance connection at the phase 2 cable lug, overheating and degradation of the cable, and the subsequent ground on bus 1B3A.

The feeder cable to MCC-3A1 was repaired and the ground cleared.

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
		2010	- 002	- 00	

## NARRATIVE

## BACKGROUND

Technical Specification (TS) 2.0.1(1) reads:

In the event a Limiting Condition for Operation and/or associated action requirements cannot be satisfied because of circumstances in excess of those addressed in the specification, the unit shall be placed in at least HOT SHUTDOWN within 6 hours, in at least subcritical and greater 300 degrees Fahrenheit within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours, unless corrective measures are completed that permit operation under the permissible action requirements for the specified time interval as measured from initial discovery or until the reactor is placed in an Operating Mode in which the specification is not applicable. Exceptions to these requirements shall be stated in the individual specifications.

TS 2.6.1(a) states:

Containment integrity shall not be violated unless the reactor is in a cold or refueling shutdown condition. Without containment integrity, restore containment integrity within one hour or be in at least hot shutdown within the next 6 hours, in at least subcritical and less than 300 degrees Fahrenheit within the next 6 hours and in cold shutdown within the following 30 hours. Normally locked or sealed-closed valves (except for PCV-742A/B/C/D) may be opened intermittently under administrative control without constituting a violation of containment integrity.

## System Description

Steam generators (SG) feedwater isolation is provided by the following valves: Main feedwater isolation valves HCV-1385 and HCV-1386, Outlet isolation valves HCV-1103 and HCV-1104 (for their respective feedwater regulation valve (FRV)) and FRV bypass valves HCV-1105 and HCV-1106. A Steam Generator Isolation Signal (SGIS) will close HCV-1385/1386, HCV-1103/1104 and HCV-1105/1106.

## EVENT DESCRIPTION

At 0238 Central Daylight Time (CDT) on April 8, 2010, a ground alarm for 480 Volt Bus 1B3A was indicating intermittently. Ground isolation efforts were conducted with the ground alarm coming in and out intermittently. At 0510 CDT, the ground alarm for 480 Volt Bus 1B3A locked in again and remained locked in until 1626 CDT when the ground was isolated to Motor Control Center (MCC)-3A1. MCC-3A1 was removed from service and Abnormal Operating Procedure (AOP)-32, "Loss of 4160 Volt or 480 Volt Bus Power," Section VII was entered. At 1622 CDT, an electrical ground on 480 Volt Bus 1B3A was determined to be from a supply cable to MCC-3A1. Isolating loads on this MCC required securing power to HCV-1385, Steam Generator RC-2B Inlet Isolation Valve. TS 2.0.1 was entered at 1622 CDT due to HCV-1385 being inoperable (per the station's Technical Data Book (TDB)-VIII guidance).

At 1740 CDT, insulation on the supply feeder cables to MCC-3A1 was found to be degraded, and the phase 2 feeder cable was shorted to ground. A plant shutdown was commenced at 1740 CDT per Operating Procedure (OP)-4, Load Change and Normal Power Operation. At 2123 CDT, the reactor was manually tripped from 22 percent reactor power per normal shutdown procedures. The plant then transitioned from TS 2.0.1(1) to TS 2.6.1a. All systems functioned properly. At 2123 CDT, the plant entered Mode 3. At 2233 CDT, HCV-1385 was manually closed and TS 2.6 was exited.

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.	3 OF 3
		2010 -	002 -	00	

## NARRATIVE

At 2034 CDT, on April 8, 2010, the NRC Headquarters Operations Office (HOO) was notified of the event per 10 CFR 50.72(b)(2)(i), 50.72(b)(3)(ii)(B), and 50.72(b)(2)(iv)(B). Additional review determined that this event is not unanalyzed and therefore should not have been reported per 10 CFR 50.72(b)(3)(ii)(B). The reactor was tripped as part of the planned reactor shutdown to repair the MCC. This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(A).

## CONCLUSION

The root cause analysis determined that the guidance in procedure EM-PM-EX-1100, "480 Volt Motor Control Center Maintenance," is inadequate to ensure that MCC-3A1 feeder cable EA124 cable lugs are properly torqued to the cables. This led to the high resistance connection at the phase 2 cable lug, overheating and degradation of cable EA124, and the subsequent ground on bus 1B3A.

## CORRECTIVE ACTIONS

The feeder cable to MCC-3A1 was repaired, the loose connection fixed and the ground cleared. The corrective action system (condition report 2010-1704) will administer additional actions as part of the corrective action process.

## SAFETY SIGNIFICANCE

Although one of the isolation valves for the steam generator was not operable for a short period of time (approximately 6 hours), the other isolation valves in the flow path were operable. One of the barriers to radioactive release was nonfunctional; however, the other barrier was operable and available to perform the required isolation function. In addition, FW-161, the main feedwater check valve inside containment, is expected to minimize any potential release through this path. Therefore, the impact of this event on the public health and safety is minimal.

## SAFETY SYSTEM FUNCTIONAL FAILURE

This event does not result in a safety system functional failure in accordance with NEI-99-02.

## PREVIOUS SIMILAR EVENTS

There have not been any similar events where a cable failure caused a reactor shutdown.