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

LIC-11-0026
May 9, 2011

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

Reference: Docket No. 50-285

Subject: Licensee Event Report 2011-005, Revision 0, for the Fort Calhoun Station

Please find attached Licensee Event Report 2011-005, Revision 0, dated, May 9, 2011. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B). No commitments are being made in this letter. If you should have any questions, please contact me.

Sincerely,

Jeffrey Reinhart
Site Vice President

JAR/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
INPO Records Center

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
Fort Calhoun Station	05000285	1 OF 4

4. TITLE

Failure to Correctly Enter Technical Specifications Limiting Condition for Operation for the Reactor Protective System

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
6	14	2010	2011	- 005 -	0 5		9	2011	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

01

10. POWER LEVEL

100

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	SY	STEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SY	STEM	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 June 14, 2010, the reactor protective system (RPS) M2 contactor (similar to the RPS breakers) failed to open during periodic surveillance testing. Operations declared the RPS M2 contactor inoperable and entered Technical Specification (TS) Limiting Condition for Operation (LCO) action 2.15(1) because the RPS M2 contactor did not have a specifically defined LCO. Subsequent reviews determined that the station continued to operate in a condition not allowed by TS on June 14 and 15 for a period of approximately 20.5 hours. TS 2.0.1 should have been invoked. (Section 2.0.1, similar to standard TS 3.0.3.)

The root cause for this error was determined to be the failure to implement an interim TS strategy when funding for standard improved TS was deferred.

The operations staff has been directed to enter TS 2.0.1 for any failures of these contactors. FCS will conduct a formal review of other components which do not have specific TS LCO action statements and station actions that could be non-conservative with regard to entering TS 2.0.1. The review will identify those items that need administrative controls and place them in the appropriate station procedures.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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NARRATIVE

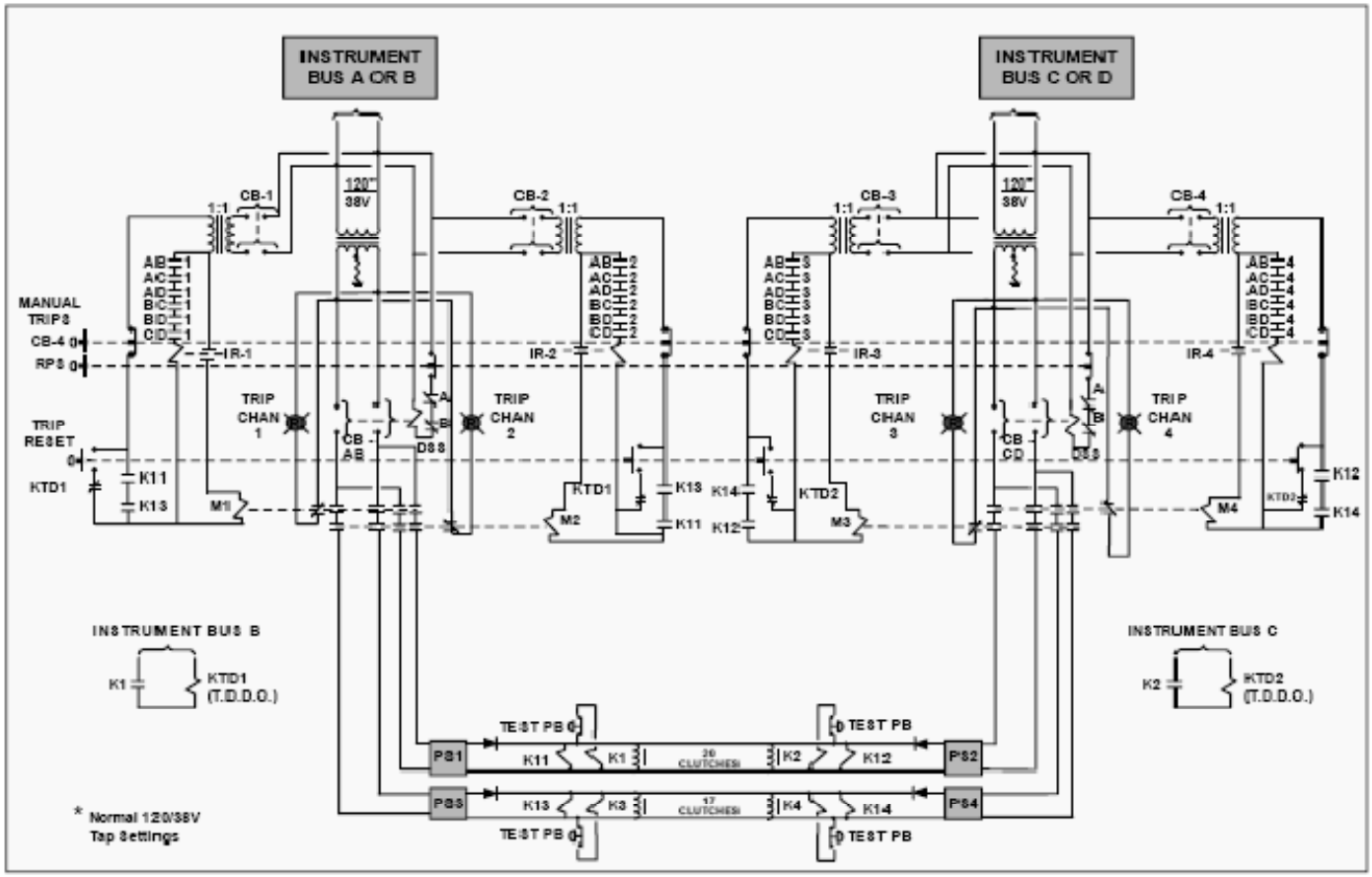
BACKGROUND

The Fort Calhoun Station (FCS) Reactor Protective System (RPS) is designed to rapidly shut down the nuclear chain reaction prior to reaching a condition that could damage the reactor core. The RPS generates a reactor trip signal, which releases the control element assemblies and allows the control rods to fall into the core. The Diverse Scram System (DSS) is a backup system, which augments the RPS by using diverse, independent components to initiate a reactor trip on high pressure in the Reactor Coolant System (RCS). The RPS continuously monitors critical parameters and compares them to setpoints to ensure that design limits are not exceeded.

The four RPS trip paths each consist of six logic matrix contacts in series. Opening any trip path contact de-energizes the interposing relay (IR), opening an “A” contact and de-energizing its respective “M” coil. Opening the “M” coil “A” contacts interrupts AC power to the clutch power supplies.

The Diverse Scram System (DSS) provides the design function of augmenting the RPS. Should an anticipated operational occurrence result in the over pressurization of the Reactor Coolant System, and the reactor fail to trip, the DSS functions to trip the reactor.

RPS TRIP PATHS



NARRATIVE

The DSS comprises four independent instrument loops, each having a pressure transmitter and bistable trip unit. The bistable trip unit output contacts are configured into two independent two out of four logic matrices. Satisfying either logic matrix will energize the associated lockout relay and de-energize the undervoltage trip coils for both reactor trip breakers CB-AB and CB-CD.

In addition, manual trip pushbuttons are provided in the control room to allow the operators to deenergize the control element assemblies. One of the two pushbuttons deenergizes the RPS M coils, the other pushbutton trips the CB-AB and CB-CD breakers.

EVENT DESCRIPTION

On June 14, 2010, the RPS M2 contactor failed to open during periodic surveillance testing. Operations declared the RPS M2 contactor inoperable, and entered Technical Specification (TS) Limiting Condition for Operation (LCO) action 2.15(1), because the RPS M2 contactor did not have a clearly defined LCO.

TS 2.15(1)

> "In the event the number of channels of a particular system in service falls one below the total number of installed channels, the inoperable channel shall be placed in either the bypassed or tripped condition within one hour if the channel is equipped with a bypass switch, and eight hours if jumpers or blocks must be installed in the control circuitry. The inoperable channel may be bypassed for up to 48 hours from time of discovering loss of operability."

Subsequent reviews determined that the station continued to operate in mode 1 at full power in a condition not allowed by TS, which would have invoked section 2.0.1. This condition existed from discovery of the failure of the RPS M2 contactor at 1355 on June 14, 2010, until June 15, 2010, at approximately 1033.

TS 2.0.1

> "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 < 300°F within the next 6 hours, and in at least COLD SHUTDOWN within the following 30 hours."

This event is being reported per 10CFR50.73(a)(2)(i)(B).

CONCLUSION

In 1992, FCS funded an initial study into the cost of implementing Improved Standard Technical Specifications (ITS). At that time implementation was deferred. In 2002, a followup study was conducted and implementation was again deferred as risk based TS were being considered by the NRC. A strong business case was not presented to the Nuclear Projects Review Committee (NPRC) for ITS. The business case for the ITS submittal to the NPRC lacked strategies to review the existing TS for weaknesses should funding be deferred.

The root cause of this event was determined to be failure to implement an interim TS strategy when funding was deferred.

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NARRATIVE

CORRECTIVE ACTIONS

Immediate corrective action has been to provide guidance to the operations staff to use TS 2.0.1 for the failure of an RPS M coil. This action has been completed.

FCS will conduct a formal review of other components which do not have specific TS LCO action statements and station actions that could be non-conservative with regard to entering TS 2.0.1. The review will identify those items that need administrative controls and place them in the appropriate station procedures.

FCS procedures will be modified to require an alternate strategy be developed for items that have identified station vulnerabilities if funding for the initial action is not approved.

SAFETY SIGNIFICANCE

The RPS provides for a redundant trip path on each set of power supplies to the clutch power supplies. A single failure such as the one documented in this LER is insufficient to prevent the RPS from deenergizing the clutch power supplies and causing a reactor trip. However, during the period that the RPS M2 contactor was stuck shut, the system did not meet the single failure design criteria. During this period, the failure of the redundant RPS M1 contactor in the shut position would have resulted in a failure to automatically trip the reactor. The M1 contactor was functional, and successfully tested during the time that the M2 contactor was degraded. The M1 contactor was subject to the same environment as the M2 contactor. However, during the time that M2 was failed the DSS system was fully operational and capable of causing a reactor trip. The first step of the standard post trip actions for the station (Emergency Operating Procedure 1) require operators to “Verify Reactivity Control is established” and if the reactor does not trip, then the operators perform the following steps concurrently:

a. Manually trip the Reactor (CB-4).
b. Manually trip the Reactor (AI-31).
c. Place the DSS Manual Trip Switches in "TRIP" (AI-66A/B).
d. Manually open the CEDM Clutch Power Supply Breakers (AI-57).

Since the reactor would have tripped, this event did not pose a significant threat to the health and safety of the public.

SAFETY SYSTEM FUNCTIONAL FAILURE

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

PREVIOUS SIMILAR EVENTS

FCS has not had any previous similar failures of RPS that have been reported.