



LIC-12-0117  
August 6, 2012

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

Reference: Docket No. 50-285

**Subject: Licensee Event Report 2012-011, Revision 0, for the Fort Calhoun Station**

Please find attached Licensee Event Report 2012-011, Revision 0, dated August 6, 2012. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) and 10 CFR 50.73(a)(2)(v)(D).

No commitments are being made in this letter.

If you should have any questions, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "D. J. Bannister".

D. J. Bannister  
Vice President and CNO

DJB /sds

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

**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 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](mailto: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.

**1. FACILITY NAME**

Fort Calhoun Station

**2. DOCKET NUMBER**

05000285

**3. PAGE**

1 OF 3

**4. TITLE**

Emergency Diesel Inoperability Due to Bus Loads During a LOOP

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
4	16	2012	2012	- 011	- 0	8	6	2012	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

  

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
5	<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)
10. POWER LEVEL	<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 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below 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

**14. SUPPLEMENTAL REPORT EXPECTED**☒ YES (If yes, complete 15. EXPECTED SUBMISSION DATE)☐ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR
10	31	2012

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

An Engineering review identified that a potential issue existed concerning Emergency Diesel Generators (EDG) capability to power required loads in certain loss of offsite power (LOOP) scenarios, specifically those scenarios during which a Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB) does not occur. In a LOOP without a concurrent accident signal, the 480 V load shed that would be initiated as a direct result of the accident signal does not occur. Therefore, the electrical load that the EDGs must pick up when the EDG output breaker automatically closes could be significantly higher than the dead load that exists in an accident scenario. A review of design basis calculations and engineering analyses has identified several evaluations that consider the EDG dead load during accidents. However, no documents evaluating EDG dead loads in non-accident conditions were found. If one EDG were inoperable due to maintenance or other activities and the electrical distribution system loading conditions were such that the other EDG could have reached the output breaker trip settings during a LOOP event, both EDGs would be inoperable and FCS would have to take action per Technical Specification (TS) 2.0.1. It is conservative to assume that such conditions existed for those EDG outages that exceeded six hours. However, actions were not taken for two inoperable EDGs per the requirements of TS 2.0.1, resulting in operation or condition prohibited by TS.

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

**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
		2012	- 011	- 0	

**NARRATIVE**

**BACKGROUND**

Fort Calhoun Station (FCS) is a two-loop reactor coolant system of Combustion Engineering (CE) design. There are two installed safety related Emergency Diesel Generators (EDGs). These units provide reliable in-plant AC electrical power when no off-site electrical power is available. Each EDG can provide adequate in-plant AC power for safe shutdown of the plant and operation of the required engineered safeguards equipment in the event of a design basis accident (DBA). The EDGs and auxiliary systems are designed so that a single failure coincident with a loss of offsite power will not prevent safe plant shutdown. The EDGs are maintained in standby during normal and shutdown plant operations. In the event that low voltage on a 4160 volt (V) bus is detected, the associated EDG will automatically start. Automatic load sequencing occurs with accident signals.

Technical Specification (TS) 2.7 specifies the limiting conditions for operations, specifications, and minimum requirements for FCS electrical systems. Two EDGs are required with provisions for single EDG inoperability. Inoperability of both EDGs would place FCS in TS 2.0.1 as there are no actions for two inoperable EDGs.

TS 2.0.1 applies to the operable status of all systems, subsystems, trains, components, or devices covered by the Limiting Conditions for Operation. This specification delineates corrective measures to be taken for circumstances not directly provided for in the system specific specifications and whose occurrence would violate the intent of the specification.

**EVENT DESCRIPTION**

An Engineering review identified that a potential issue existed concerning Emergency Diesel Generators (EDG) capability to power required loads in certain loss of offsite power (LOOP) scenarios, specifically those scenarios during which a Loss of Coolant Accident (LOCA) or Main Steam Line Break (MSLB) does not occur. In a LOOP without a concurrent accident signal, the 480 V load shed that would be initiated as a direct result of the accident signal does not occur. Therefore, the electrical load that the EDGs must pick up when the EDG output breaker automatically closes could be significantly higher than the dead load that exists in an accident scenario. A review of design basis calculations and engineering analyses has identified several evaluations that consider the EDG dead load during accidents. However, no documents evaluating EDG dead loads in non-accident conditions were found. If one EDG were inoperable due to maintenance or other activities and the electrical distribution system loading conditions were such that the other EDG could have reached the output breaker trip settings during a loss of offsite power (LOOP) event, both EDGs would be inoperable and FCS would have to take action per TS 2.0.1. It is conservative to assume that such conditions existed for those EDG outages that exceeded six hours. However, actions were not taken for two inoperable EDGs per the requirements of TS 2.0.1, resulting in operation or condition prohibited by TS.

This report is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B), operation or condition prohibited by Technical Specifications and 10 CFR 50.73(a)(2)(v)(D), 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.

This LER reports a condition where analyses have not been found that would support operating practices, resulting in periods of EDG inoperability in excess of TS allowed limits. The initial Operations review focused on the current operating conditions, noting that the condition would need to

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**NARRATIVE**

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.

**CONCLUSION**

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

**CORRECTIVE ACTIONS**

A cause analysis is in progress. One interim action has been identified. Pending resolution of this issue, Operations will not cross tie 480 V buses except in an emergency. Other corrective actions will be published in a supplement to this LER.

**SAFETY SIGNIFICANCE**

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

**SAFETY SYSTEM FUNCTIONAL FAILURE**

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

**PREVIOUS EVENTS**

A cause analysis is in progress. Previous events will be determined from the results of the cause analysis.

