



Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

September 24, 1998
LIC-98-0119

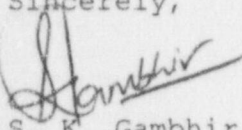
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Reference: Docket No. 50-285

Subject: Licensee Event Report 1998-011 Revision 0 for the Fort
Calhoun Station

Please find attached Licensee Event Report 1998-011 Revision 0 dated
September 24, 1998. This report is being submitted pursuant to
10CFR50.73(a)(2)(i)(B). If you should have any questions, please
contact me.

Sincerely,


S. K. Gambhir
Division Manager
Nuclear Operations

EPM/epm

Attachment

c: E. W. Merschhoff, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
INPO Records Center
Winston and Strawn

9809300371 980924
PDR ADOCK 05000285
S PDR

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO THE INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Fort Calhoun Station Unit No. 1	DOCKET NUMBER (2) 05000255	PAGE (3) 1 OF 4
--	-------------------------------	--------------------

TITLE (4)
Violation of Technical Specification on Engineered Safety System Equipment Operability

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
08	25	1998	1998	-- 011 --	00	09	24	1998	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFRs (Check one or more) (11)											
	20.2201(b)			20.2203(a)(2)(i)			X 50.73(a)(2)(i)			50.73(a)(2)(viii)		
	20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)			50.73(a)(2)(x)		
	POWER LEVEL (10) 100	20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)			73.71	
		20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)			OTHER	
	20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)			Specify in Abstract below or in NRC Form 366A		
20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Richard A. Ronning, System Engineer	TELEPHONE NUMBER (Include Area Code) 402-533-6887
---	--

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
--	---	----	-------------------------------	-------	-----	------

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

In 1992, guidance was provided that stated if either Diesel Generator (DG) primary or secondary air start system was operable, then the DG was operable. In June of 1998, during a review of electrical schematics for the DG, it was discovered that when the DG primary air start system is made inoperable, a two second time delay is introduced into the starting sequence for the DG secondary air start system, thus making the DG inoperable. A review was conducted to determine if there were other Engineered Safety Feature (ESF) components out of service on the opposite safety bus while one of the DG primary air start systems was inoperable. There were four instances when a DG was taken out of service (by rendering its primary air start system inoperable) at the same time as another ESF component on the opposite safety bus, which violates the plant Technical Specifications (TS).

This condition was caused by a lack of understanding of all the starting air circuit details and how they relate to the 10 second start requirement of the diesel generators found in the TS.

Immediate corrective actions were to place caution tags on the DG and their control panels describing the problem. Action was taken to change the operational guidance to prevent the DG primary air start system from being removed from service unless the DG is declared inoperable and the appropriate TS is entered.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	1998	011	00	2 OF 4

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

BACKGROUND

Fort Calhoun Station (FCS) utilizes two emergency diesel generators (DG) (EIIS: EK), either of which is capable of providing power to emergency safeguards loads in the event of an accident. The DG engines are started by air powered starting motors (EIIS: LC). Each DG room contains four starting air receiver tanks with enough combined air capacity to provide for 10 DG starts. A diesel engine is started using two (out of four) air driven starting motors. The air motors that receive the first start signal are called the primary motors. The other two air motors are referred to as the secondary air start motors. In the event that the main air valve for the primary air start motors does not open to supply air to the motors, a time delay relay senses this fault and interrupts the start signal to the primary motors, and at the same time provides a signal to the secondary air start motors to start the DG.

FCS is required by Technical Specification (TS) 3.7 to verify (at least once per 180 days) the ability of the DG to reach rated speed and voltage within 10 seconds. There is no requirement to test both primary and secondary air start systems. FCS has historically tested only the primary air start system's ability to start the diesel within 10 seconds as required by TS.

The monthly start of each DG does not test the ability of the DG to reach rated speed and voltage within 10 seconds. The monthly start of the DG does periodically test the ability of the secondary air starting system to start the DG.

Section 2.7 of the FCS TS allows "Either one of the emergency diesel generators (DG-1 or DG-2) may be inoperable for up to seven days (total for both) during any month, provided there are no inoperable required engineered safeguards components associated with the operable diesel generator." TS 2.0.1 covering conditions in excess of the Limiting Conditions for Operation (LCO) states, "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 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."

Because there are two air start systems, either of which is capable of providing five DG starts, it was accepted practice at FCS to valve one of the two air start systems out of service for maintenance and still consider the DG operable because the other air start system would start the DG.

EVENT DESCRIPTION

In June of 1998, during a review of electrical schematics for the DG, it was discovered that when the primary air start system (EIIS: LC) was made

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	1998	011	00	3 OF 4

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

inoperable, a two second time delay is introduced into the starting sequence for the secondary air start system (EIIIS: LC). The primary and secondary air start systems for the DG are identical with the exception of the 2 second time delay. As previously mentioned, the secondary air start system is not tested or required to be tested for compliance with the 10 second start requirement. The monthly start of the DG does periodically test the ability of the secondary air starting system to start the DG. The diesel start times for the TS required test are routinely in the range of 7.5 to 8.5 seconds. Therefore, with the additional 2 second delay, it is possible that the DG would not meet the TS requirement for a DG to start in less than 10 seconds.

The Technical Data Book (TDB) section entitled "Equipment Operability Guidance," TDB-VIII, provides guidance regarding certain TS components. The section pertaining to DG operability provides a list of subsystems/components that may be taken out of service without affecting the operability of the associated diesel generator. About 250 components are listed in this section in a number of groupings. The TDB section provides guidance for removing air start system components from service without impacting DG operability. The guidance states that "any or all components in column a(b) may be inoperable provided there are no inoperable components in column b(a), and provided that all necessary pressure boundaries are maintained." Following this statement are the two columns that contain components associated with primary and secondary air start systems. The guidance would have allowed the primary air start system to be removed from service because the secondary air start system would still be able to start the DG. While this is true, it does not take into account the two second delay that would occur following an emergency start signal before the secondary air start motors would begin to "crank" the DG. This two second time delay could result in a DG not reaching rated speed and voltage within 10 seconds. TS 3.7, "Emergency Power System Periodic Tests," requires testing to verify that "the diesel starts and accelerates to rated speed and voltage in less than or equal to 10 seconds." No surveillance test verifies that the DG would reach rated speed and voltage in 10 seconds if the primary air start system is not in service nor does TS require such a test. In the past the primary air start system has been tagged out in accordance with the guidance given in the TDB, and the DG was considered to be operable since it was known that the DG would still start on the secondary air starting system.

A review of maintenance performed on the primary air start system for either DG-1 or DG-2 was performed for the time period when this guidance was in effect. The tag-out sheets used for performance of this maintenance were reviewed to determine the out-of-service times for the primary air start system. The control room logs for that day were then reviewed to determine if there were other Engineered Safety Feature (ESF) components out of service on the opposite safety bus. There were four instances when a DG was taken out of service at the same time as another ESF component on the opposite safety bus. This violates the LCO for TS 2.7 and requires entry into TS 2.0.1, which is reportable as a condition prohibited by plant TS. On August 25, 1998, it was determined that this condition was reportable per 10 CFR 50.73(a)(2)(i)(B). This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTI NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	1998	011	00	4 OF 4

TEXT (if more space is required, use additional copies of NRC Form 366A) (17)

SAFETY SIGNIFICANCE:

The Loss of Coolant Accident (LOCA) analysis from the Updated Safety Analysis Report (USAR) states that the time until Safety Injection (SI) is required is about 31 seconds. The DG design documentation demonstrates that with all delays maximized, including a diesel start time of 10 seconds to full rated speed and voltage, SI occurs in approximately 22 seconds. Therefore, a 2 second time delay for DG starting is not nuclear safety significant.

There were four incidents identified during which a DG was inoperable due to the primary air start system being inoperable and a piece of engineered safeguards equipment was inoperable from the other DG bus. In two of these incidents the duration of the combination of DG and ESF components was about 6 hours. In the other two incidents, the situation was only in effect for about 3 hours. Due to the minimal duration of the events and the USAR analysis, these events had little if any impact on the health and safety of the public.

CAUSAL ANALYSIS:

The cause of this event is a lack of understanding of the starting air circuit details by personnel involved with providing guidance for operability of the DGs. Plant personnel knew that the secondary starting air system would successfully start the engine when the primary air start system was out of service. However, they were not aware of the 2 second time delay in the secondary starting circuit. The 2 second time delay was only found by a review of the appropriate plant electrical schematic.

CORRECTIVE ACTIONS:

Immediate corrective actions were to place caution tags on the DGs and their respective control panels which state that removing the primary air start system from service renders the DG inoperable. A change to the guidance in the TDB which previously allowed the primary air start system to be out of service without declaring the DG inoperable is being made. This change will prevent the DG primary air start system from being removed from service unless the DG is declared inoperable and the appropriate TS LCO is entered. This change will be completed by October 9, 1998.

PREVIOUS SIMILAR EVENTS:

LER 1997-002 reported a similar situation where an interpretation of a TS was incorrect resulting in an operation prohibited by plant TS.