

Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247
402/636-2000

April 5, 1990
LIC-90-0290

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

Reference: Docket No. 50-285

Gentlemen:

Subject: Licensee Event Report 90-08 for the Fort Calhoun Station

Please find attached Licensee Event Report 90-08 dated April 5, 1990.
This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).

If you should have any questions, please contact me.

Sincerely,

W. G. Gates

W. G. Gates
Division Manager
Nuclear Operations

WGG/tcm

Attachment

c: R. D. Martin, NRC Regional Administrator
A. Bournia, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector
INPO Records Center
American Nuclear Insurers

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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)

0 5 0 0 0 2 8 1 5 1 OF 0 1 3

PAGE (3)

TITLE (4)

Inadvertant Actuation of Pressurizer Pressure Low Signal

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 NAMES	DOCKET NUMBER(S)
03	06	90	90	008	000	04	05	90	N	050000
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)										
OPERATING MODE (9)		5		20.402(b)		20.406(e)		X 50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)		0.010		20.406(a)(1)(i)		50.36(e)(1)		50.73(a)(2)(v)		73.71(c)
				20.406(a)(1)(ii)		50.36(e)(2)		50.73(a)(2)(vi)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
				20.406(a)(1)(iii)		50.73(e)(2)(i)		50.73(a)(2)(viii)(A)		
				20.406(a)(1)(iv)		50.73(e)(2)(ii)		50.73(a)(2)(viii)(B)		
				20.406(a)(1)(v)		50.73(e)(2)(iii)		50.73(a)(2)(ix)		

LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER

Keith Voss, Shift Technical Advisor

AREA CODE

410 12 513 131-16 1913 11

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

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

On March 6, 1990 at 0755 hours, an electrician was connecting leads as part of a Control Room Ventilation modification. The electrician caused a short circuit while working on an energized circuit. This caused a momentary loss of power to instrument bus AI-40A from Inverter 'A' which resulted in the loss of the 'A' channel Pressurizer Pressure Low Signal (PPLS) block. PPLS was actuated on ESF Channel 'A'. This caused termination of containment purge by initiating a Containment Isolation Actuation Signal, which is an Engineered Safeguards Feature.

There were several causes of this event. The modification package procedure did not clearly indicate that some circuitry was still energized even after tag-out of the system. The electrician failed to verify prior to work that the circuits were de-energized.

As a result of this event, enhanced general guidelines have been issued to personnel involved with modifications. Further corrective actions include evaluations to identify improvements in present administrative guidance and controls for activities which could result in inadvertent actuations of safety systems.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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) 0 5 0 0 0 2 8 5	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9 0	— 0 0 8	— 0 1 0	0 2	OF 0 3

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

The Pressurizer Pressure Low Signal (PPLS) is part of the initiating network of the Engineered Safeguards Features (ESF) Control System at Fort Calhoun Station Unit No. 1. PPLS results when the pressure in the Reactor Coolant System (RCS) drops below 1600 psia. During operation, a RCS pressure decrease below 1600 psia could indicate either a Loss of Coolant Accident (LOCA) or a Main Steam Line Break (MSLB) is in progress. In order to mitigate the consequences of either accident, PPLS will initiate the following safeguard signals: Safety Injection Actuation Signal (SIAS), Containment Isolation Actuation Signal (CIAS), Sequencers, Diesel Generator Start, and Diesel Breaker Protection Override. These signals will feed other safeguards signals and start various safeguards pumps, fans, and other support auxiliaries. The PPLS signal can be blocked to prevent unnecessary safeguards actuations while performing a controlled cooldown and depressurization of the RCS.

The 'A' channel PPLS relay is connected to instrument bus AI-40A, which is powered from Inverter 'A'. The static switch to the inverter is designed to transfer the critical loads without interruption from the inverter to the bypass transformer. During manual operation, static switch transfers occur at zero crossing current and no detectable loss of power to the load is experienced. However, a fast acting inverter fault circuit is used to shut down the inverter very rapidly when an overload condition occurs. This generates a fault signal that is held for approximately one-quarter second, which is long enough to cause the relay for PPLS block to drop out. Thus, automatic operation of the static transfer function will cause a momentary loss of voltage on the bus and loss of the PPLS block.

On March 6, 1990 the plant was in Mode 5 (Refueling Shutdown) with the containment purge in operation. The 'A' channel of the SIAS circuitry was blocked due to the removal of a fuse to support a test. The diesel generator associated with the 'A' channel of the ESF was tagged out for overhaul. An electrician was connecting leads as part of a Control Room Ventilation modification. The HVAC panel circuit the electrician was working on was powered from AI-40A, but he thought the panel was completely de-energized.

At 0755 hours, the electrician created a short circuit which caused Inverter 'A' to automatically transfer to its bypass source as designed. This resulted in a momentary loss of power to instrument bus AI-40A and subsequent loss of the 'A' channel PPLS block. PPLS was actuated on ESF Channel 'A'. Upon seeing the spark, the electrician informed the modification planner, who then informed Operations personnel what had occurred.

Full Containment isolation did not occur for this event since the CIAS override switch for the Containment Isolation valves was in the 'TEST' position. However, the signal to isolate the containment purge is fed directly from the CIAS relay and is not affected by the position of the CIAS override switch, so the purge was isolated. The isolation of the containment purge by CIAS is an actuation of an ESF per Section 6.1.2.1 of the USAR.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

At 0759, PPLS was reblocked, the PPLS and the CIAS relays were reset, and the containment purge was restarted. Pursuant to the requirements of 10 CFR 50.72(b)(2)(ii) a four hour notification was made to the NRC Operations Center at 0940.

The plant systems involved in this event functioned as anticipated with no equipment failure or damage. Shutdown cooling was not affected by this event. The initiation of PPLS, in this instance, was not intended to mitigate the consequences of a Design Basis Accident.

There were several causes of this event. The modification package procedure did not clearly indicate that some circuitry was still energized even after tag-out of the system. The electrician failed to verify prior to work that the circuits were de-energized.

Corrective actions for this event are as follows:

- (1) Memoranda have been issued to appropriate plant personnel by departmental management reminding employees to use caution and proper work practices when working around electrical control equipment.
- (2) A review of engineering modification design procedures will be conducted to ensure that guidance regarding potential inadvertent actuation of ESF circuitry is appropriately addressed. This review will be completed by August 1, 1990.
- (3) Plant management will evaluate present administrative guidance and controls for work which could affect electrical control equipment. The purpose of this evaluation will be to identify programmatic improvements which could prevent unplanned actuations of safety systems. This evaluation will be completed by August 1, 1990.

There have been 4 other LER's (87-011, 87-012, 87-017 and 88-038) due to a momentary loss of power to the instrument bus powering the PPLS block relay. LER's 90-02 and 90-06 also concern similar instances of inadvertent ESF actuations.