

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

May 8, 1992
LIC-92-133L

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 92-013 for the Fort Calhoun Station

Please find attached Licensee Event Report 92-013 dated May 8, 1992. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) and 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/lah

Attachment

c: R. D. Martin, NRC Regional Administrator, Region IV
D. L. Wigginton, NRC Senior Project Manager
S. D. Bloom, NRC Project Engineer
R. P. Mullikin, NRC Senior Resident Inspector
INPO Records Center

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Employment with Equal Opportunity
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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 | 5

PAGE (3)
1 OF 0 | 4

TITLE (4)
Inadvertent Isolation of Radiation Monitors During Containment Purge

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)																
0	4	0	8	9	2	9	2	2	0	1	3	0	0	0	5	0	8	9	2	N	0	5	0	0	0		

OPERATING MODE (9) 5

POWER LEVEL (10) 0 | 0 | 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. Check one or more of the following: (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 75.71(b)
<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 50.59(c)(1)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 75.71(c)
<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 50.36(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 302A)
<input type="checkbox"/> 20.406(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(v)	

LICENSEE CONTACT FOR THIS LER (12)

NAME: Scott A. Lindquist, Shift Technical Advisor

TELEPHONE NUMBER: 4 | 0 | 2 | 5 | 3 | 3 | - | 6 | 8 | 2 | 1 | 9

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On April 8, 1992 at 1538, a containment purge in progress was secured after an unplanned actuation of Engineered Safety Feature (ESF) components occurred when three ventilation isolation valves (HCV-746A, PCV-742E and PCV-742G) closed unexpectedly. The closure of valves PCV-742E and PCV-742G resulted in the isolation of containment atmosphere process radiation monitors for particulate and noble gas (RM-050/051). A containment purge was in progress and Technical Specification 2.9.1(2)g(v) requires these monitors to be operable and in service during a containment purge.

The event occurred when leads were inadvertently lifted during work in a control room panel. The root cause of this event was identified as the susceptibility of the spade wire lugs installed during original construction to inadvertent loosening and loss of connection.

The incident did not present a significant hazard to the health or safety of the public as three ventilation stack process radiation monitors were operable and capable of isolating the release if their setpoints were exceeded.

Corrective actions include revising maintenance procedure requirements for terminating wires and providing a discussion of this event and the associated Root Cause Analysis as required reading to Maintenance Electricians and Instrument and Control personnel.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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 5 9 2 - 0 1 3 - 0 0	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
					0 2	OF 0 4

TEXT (If more space is required, use additional NRC Form 898A's)(17)

The Ventilation Isolation Actuation Signal (VIAS) is intended, in part, to prevent the release of significant radioiodine or radioactive gas from the containment to the atmosphere. One possible source of such nuclides could be reactor coolant leaks below the range that would be detected by coolant or containment pressure instrumentation. The VIAS is initiated by any of the following signals: 1) Safety Injection Actuation Signal (SIAS), 2) Containment Spray Actuation Signal (CSAS) or 3) a Containment Atmosphere Radiation High Signal (CRHS).

VIAS initiates the following actions:

- 1) Closes containment pressure relief valves HCV-746A/B,
- 2) Closes containment purge valves PCV-742A/B/C/D,
- 3) Stops the containment purge fans,
- 4) Closes containment air sample valves PCV-742E/F/G/H for radiation monitors RM-050/051,
- 5) Opens inlet and outlet vents to the safety injection pump rooms and the spent regenerant tank room,
- 6) Places control room ventilation in the filtered air makeup mode,
- 7) Isolates the waste gas decay tanks.

The Containment Isolation Actuation Signal (CIAS) is intended to prevent the release of radioactivity from the containment, especially in the event of an accident. All containment building piping penetrations are considered potential paths for the escape of radioactivity and are therefore, equipped with isolation valves. The CIAS is initiated by either of the following signals: 1) Containment Pressure High Signal (CPHS) or 2) Pressurizer Pressure Low Signal (PPLS).

The CIAS initiates the following actions:

- 1) Closes the containment isolation valves for flow paths which are not required to control or mitigate the accident,
- 2) Provides cooling water flow through containment cooling coils to reduce the magnitude and duration of the pressure transient,
- 3) Secures component cooling water flow through unnecessary heat loads.

On April 8, 1992 while in Mode 5 for Cycle 14 refueling, Instrument and Control (I&C) personnel were in the process of removing power and lifting wires to replace nuclear detector well cooling unit pressure indicating controller PIC-705 in control room panel AI-44-3. While attempting to remove the power supply to PIC-705, the I&C personnel were tracing out power leads by hand in adjacent panel AI-44-2 when wires at terminals AL-F35 and AL-F36 were inadvertently lifted (the wires had spade wire lug terminations). This resulted in loss of the 125 VDC power supply to containment atmosphere radiation monitors RM-050/051 isolation valves PCV-742E and PCV-742G, containment pressure relief inboard isolation valve HCV-746A, gas decay tank room supply damper HCV-792A, waste gas compressor room supply damper HCV-794A, and shutdown cooling heat exchanger room supply damper HCV-796A, which all failed closed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1) Fort Calhoun Station Unit No. 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 5	LER NUMBER (3)			PAGE (4)	
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TEXT (If more space is required, use additional NRC Form 898A's)(17)

Upon lifting the leads the I&C personnel informed the control room Operators who began an investigation of plant status. At 1538 on April 8, 1992, the containment purge in progress was secured due to the discovery that PCV-742E and PCV-742G had closed. During the investigation it was also discovered that the Emergency Response Facility (ERF) computer had failed to alarm and print the time of closure of PCV-742E, PCV-742G and HCV-746A. It is estimated that PCV-742E and PCV-742G were closed no longer than fifteen minutes prior to securing the containment purge.

PCV-742E, PCV-742G and HCV-746A receive both VIAS and CIAS closure signals. Therefore, this event was determined to constitute an actuation of Engineered Safety Feature (ESF) components and the NRC was notified on April 8, 1992 at 1744 CST, pursuant to 10 CFR 50.72(b)(2)(ii).

The unplanned isolation of process radiation monitors RM-050/051 is reportable for two reasons. The first is that while the monitors were isolated, and therefore inoperable, a containment purge was in progress. Technical Specification (TS) 2.9.1(2)g(v) requires these monitors to be operable and in service during a containment purge. This event constituted a violation of TS 2.9.1(2)g(v) and is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B). The two valves which closed to isolate RM-050/051 (PCV-742E and PCV-742G) and the containment pressure reduction valve that closed (HCV-746A) are operated by CIAS or VIAS relays. For this reason this event is also considered reportable pursuant to 10 CFR 50.73(a)(2)(iv) as an actuation of ESF components.

This incident did not present a significant hazard to the health or safety of the public. The three process radiation monitors on the ventilation stack (RM-060/061/062) were operable and in service with the capability to isolate the release if their setpoints were exceeded. Also, it is estimated that RM-050/051 were isolated no more than fifteen minutes prior to securing the containment purge.

The root cause of this event was identified as the susceptibility of the spade wire lugs installed during original construction to inadvertent loosening and loss of connection. The following three contributing causes were also identified for this event:

- 1) Original construction at Fort Calhoun did not specify the use of ring wire lugs as currently specified in Engineering Standard Specification ESS-8,
- 2) Inadequate sensitivity of I&C personnel to the susceptibility of spade wire lugs to inadvertent loosening and loss of connection,
- 3) Condition of panel wiring not conducive to panel maintenance. (Wire identification is difficult due to wiring congestion, and less than ideal wire labeling and panel cleanliness. The potential for spade wire lugs to loosen during manipulation of wiring complicates performance of maintenance in the panels.)

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUIREMENT: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-590), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (2150-0104), 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 (3)			PAGE (3)	
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TEXT (If more space is required, use additional NRC Form 896A's)(17)

An investigation was performed to determine the reason ERF computer alarm, were not received when valves PCV-742E, PCV-742G and HCV-746A closed. The problem was traced to the "B" Qualified Safety Parameter Display System panel. This channel was reset and the system was found to provide correct valve position indication and the appropriate alarms were received. The problem is considered to have been caused by outage activities (possibly involving an electrical noise spike) and no further corrective action was found to be necessary.

The following corrective actions will be performed:

1. Maintenance procedures will be revised by September 1, 1992 to incorporate requirements for terminating wires in accordance with appropriate engineering standards.
2. A requirement for a close-out inspection of control room panel maintenance activities, to ensure that the condition of panel wiring (i.e., craftsmanship, cleanliness, etc.) complies with procedural requirements, will be implemented by September 1, 1992.
3. A discussion of this event and the associated Root Cause Analysis will be provided to Maintenance Electricians and I&C personnel as required reading by May 31, 1992 to increase sensitivity to the possibility of inadvertently lifting spade wire lugs.

LERs 89-004, 90-002, 90-008, 90-011, 91-002, 91-009, 91-021, 91-024 and 92-007 document other recent events involving inadvertent VIAS or CIAS actuations.