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

April 1, 1992
LIC-92-063L

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 92-009 for the Fort Calhoun Station

Please find attached Licensee Event Report 92-009 dated April 1, 1992. 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
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

IE22 1/1

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

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.

LICENSEE EVENT REPORT (LER)

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): Unplanned Actuation of the Ventilation Isolation Actuation Signal after Installing Fuses

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 3	0 2	9 2	9 2	— 0 0 9	— 0 0	0 4	0 1	9 2	N	0 5 0 0 0
										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 §: (Check one or more of the following) (11)

20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
John K. Kellams, Shift Technical Advisor	AREA CODE: 4 0 2 — 5 3 3 - 1 6 0 5

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)

		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)

At 0155 hours, on March 2, 1992, while Fort Calhoun Station was in refueling shutdown (Mode 5), an electrician was installing fuses to re-energize a lockout relay associated with channel B of the emergency safeguards Ventilation Isolation Actuation Signal (VIAS). When lockout relay 86B/VIAS was re-energized, it tripped, resulting in an unplanned VIAS actuation. Components designed to respond to a VIAS performed as expected. After further investigation it was discovered that the lockout relay for channel B of the Containment Radiation High Signal (CRHS), 86B/CRHS, had been installed in its tripped condition and was not reset following installation, resulting in the initiation of the VIAS when its circuit was re-energized.

The safety significance of this event was low because the VIAS placed the plant into a more conservative condition than required at the time of the event.

The cause of this event was determined to be a procedural deficiency resulting from inadequate verification and validation of the procedure governing the removal and replacement of lockout relays.

Corrective actions to address this event include review and revision of the deficient procedure and providing information regarding this event to appropriate individuals.

At Fort Calhoun Station Unit No. 1, the Ventilation Isolation Actuation Signal (VIAS) is designed to prevent release of significant radioiodine or radioactive gas from the containment to atmosphere from such sources as reactor coolant leaks. VIAS is designed to be initiated by any one of three actuation signals; Safety Injection Actuation Signal (SIAS), Containment Spray Actuation Signal (CSAS), and Containment Radiation High Signal (CRHS). The CRHS feature employs five radiation monitors which take samples from the containment and/or plant ventilation stacks. Activity detected above the setpoints of any one of these five monitors can initiate a CRHS from either of two redundant circuits (A and B). Control room indication for the status or presence of CRHS and VIAS signals is provided through annunciators. Position indication of each signal's respective lockout relays is also provided. Lockout relay 86B/CRHS (B circuit of Emergency Safeguards) is normally in its reset position. If one of the five radiation monitors reaches its setpoint, the 86B/CRHS relay trips, producing a CRHS which trips the 86B/VIAS lockout relay. The signals generated by the tripping of the 86B/VIAS relay are designed to perform several automatic functions.

The functions which VIAS performs are:

1. Closes the containment purge valves (if open),
2. Closes the containment pressure relief valves (if open),
3. Stops the containment purge fans (if running),
4. Closes the containment air sampling valves,
5. Bypasses the safety injection pump rooms' and spent regenerate tank room's filters,
6. Places the control room ventilation system in the filtered air makeup mode, and
7. Isolates the waste gas decay tanks.

On February 28, 1992 at 1303, Fort Calhoun Station was in mode 5 (refueling shutdown). Equipment tagouts for the removal of fuses from the circuitry associated with lockout relay 86B/CRHS were completed and the relay removed for cleaning and repair/replacement under Maintenance Work Order (MWO) 920048. Four other MWOs (914315, 914316, 914317 and 914318), each for the removal and repair/replacement of additional lockout relays on the "B" Safeguards panel, were also performed in conjunction with the 86B/CRHS relay maintenance. The tagouts for these MWOs included the removal of fuses VV-3 and VV-4 for the 86B/VIAS lockout relay, and fuses VV-7 and VV-8 for the 86B/CRHS relay, to ensure proper isolation of associated circuitry prior to performing maintenance.

On March 2, 1992, after the reinstallation of the 86B/CRHS relay had been completed, the lead maintenance craft person performing the work conferred with a Senior Licensed Operator regarding the reinstallation of the fuses and clearance of the tagout. There was a discussion about relay 86B/CRHS being in a "Tripped" condition (the other four lockout relays were in the "Reset" condition). Following the MWO and its detailed work instruction, the lead maintenance craft person erroneously believed the tripped condition of relay 86B/CRHS to have been accounted for in these procedures. Convinced by this discussion, the Senior Licensed Operator authorized reinstallation of the fuses.

At 0155 hours on March 2, 1992, fuses VV-3 and VV-4 were being installed in order to return power to the 86B/VIAS lockout relay circuit. As the second fuse made contact with its holder, the maintenance personnel heard an audible alarm (i.e. the VIAS actuation). They continued to reinstall the remaining fuses. As they began to install fuses VV-7 and VV-8 for the 86B/CRHS relay, the operator instructed them to stop due to the VIAS which had occurred when fuses VV-3 and VV-4 were installed.

The control room operators verified that all systems functioned as required for an emergency safeguards actuation of VIAS. All additional work on the relay was stopped until a review of the work documents could be performed. The review determined that the 86B/CRHS lockout relay should have been placed in its "Reset" condition prior to fuse replacement. The CRHS and VIAS relays were reset and the remaining fuses installed.

The NRC was notified of this event at 0315 on March 2, 1992, pursuant to 10 CFR 50.72(b)(2)(ii). This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).

A Root Cause Analysis (RCA) was performed following this event. The RCA included a review of each of the five MWO packages and their associated detailed work instructions, a review of the associated electrical schematics, and interviews with the Senior Licensed Operator, lead Maintenance craft person, Maintenance Planners, and other individuals. This investigation determined that having the 86B/CRHS relay in its "Tripped" condition resulted in closing a contact in the 86B/VIAS relay circuitry which caused the VIAS actuation when power was returned to the 86B/VIAS circuit as a result of the installation of fuses VV-3 and VV-4.

The review of each of the five MWO work packages revealed that procedure EM-RR-EX-0201 was to be followed for detailed work instructions on the repair and replacement of the lockout relays. Only one of these work packages included instructions specifying the need to place the relay into a particular position prior to the replacement of fuses. This need was not specified in the CRHS relay replacement work instructions or in procedure EM-RR-EX-0201, indicating that an inadequate verification and validation was performed on this procedure prior to its implementation.

Interviews with the lead Maintenance craft person, Maintenance Planner and the Senior Licensed Operator indicated that technical reliance was placed upon the procedures being used to ensure that the CRHS relay was placed in its appropriate condition prior to fuse replacement. Although the tripped condition of the CRHS relay was recognized and discussed prior to the actuation, the individuals involved defaulted to the instructions in the MWO when the procedure did not provide specific guidance.

The significance of this event to nuclear safety is low because the VIAS placed the plant into a more conservative condition than required at the time of the event. All equipment responded as designed.

The root cause of the inadvertent VIAS actuation was determined to be inadequate verification and validation of procedure EM-RR-EX-0201. A contributing cause for this event was over-reliance on the technical adequacy of the MWO and procedure, and failure to recognize the implications of reinstalling fuses when relay 86B/CRHS was in the tripped condition.

The following corrective actions have been or will be completed:

1. Procedure EM-RR-EX-0201, 'Repair/Replacement of Lockout Relays,' has been revised to include a step addressing resetting of lockout relays. To further improve procedure EM-RR-EX-0201, it will be revised to require that the correct lockout relay condition (i.e. tripped or reset) be specified for each lockout relay before the relays are returned to service and energized. This will be completed by July 31, 1992.

2. Following revision of EM-RR-EX-0201, information regarding this event will be provided as required reading to Electrical Maintenance, Instrumentation & Control Maintenance, Licensed Operators, and System Engineering personnel by September 30, 1992 and will be included in initial training for these personnel by December 31, 1992.

3. This event has been discussed with the technical reviewer of procedure EM-RR-EX-0201.

LER 91-024 documents a recent event which involved the actuation of safeguards components due to improper fuse removal. The root causes, however, differ between the previous actuation and this event.