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

April 17, 1996
LIC-96-0051

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 96-001 Revision 0 for the Fort Calhoun Station

Please find attached Licensee Event Report 96-001 Revision 0 dated April 17, 1996. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv). If you should have any questions, please contact me.

Sincerely,

T. L. Patterson
Division Manager
Nuclear Operations

TLP/epm

Attachment

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

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NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 4/30/98

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.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Fort Calhoun Station Unit No. 1	05000285	1 OF 5

TITLE (4)
Containment Ventilation Isolation Signal Due to High Activity During 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 NAME	DOCKET NUMBER
										05000
03	18	96	96	-- 001 --	00	04	17	96	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	4
POWER LEVEL (10)	0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§ (Check one or more) (11)

20.2201(b)	20.2203(a)(2)(v)	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)
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)	X 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	TELEPHONE NUMBER (Include Area Code)
Scott A. Lindquist, Shift Technical Advisor	(402) 533-6829

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 15 single-spaced typewritten lines) (16)

During a containment purge initiated on March 18, 1996, following a normal reactor shutdown, the ventilation portion of the engineered safeguards system (ESF) initiated on a valid high radiation signal. The initiation of this ESF subsystem secured the release prior to exceeding any regulatory limits.

The root cause of this event was inadequate procedural guidance for the situation. The contributing cause was lack of communication between the operators and chemists involved with the release.

Corrective actions for this event include short term direction to the operations staff to use the containment mini-purge system should a similar situation occur. Long term corrective actions include revising applicable procedures to provide appropriate guidance for these types of situations and requiring a pre-job briefing for initial containment purges.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	96	- 001 -	00	2 OF 5

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

BACKGROUND

The containment purge system was designed to purge containment by delivering up to 50,000 cubic feet per minute (cfm) of outside air through the building. The system performs the following functions:

1) It provides a means for the reduction of concentrations of radioactive particulates and noble gases in the containment.

2) It ventilates the building to provide a suitable environment for personnel access.

3) The system may be used to reduce the pressure in the containment to equalize containment pressure with atmospheric pressure.

The purge exhaust system has four flow paths. Two high volume flow paths and two low volume flow paths. The two high volume flow paths each consist of an air handling unit, which contains a vane axial fan and filter, and associated piping and valves. The two low volume flow paths (mini-purge) each include a vane axial fan, recirculation control valve, purge control valve and a flow element. The recirculation control valves and purge control valves are used to vary the flow rate. Valves have been provided to isolate the low volume flow paths from the high volume flow paths.

Exhaust air is continuously monitored for radioactive particulate and gas concentrations before being discharged to the atmosphere through the auxiliary building ventilation stack. A bypass duct from the supply system to the monitoring station at the stack permits the system to operate at full flow capacity with a reduced air flow through the containment. In addition, remote-manually operated butterfly dampers are installed in the supply return and bypass ducts to permit modulation of the air flow. These features permit dilution and/or reduction of the containment exhaust air flow prior to environmental dispersal should the activity level in the undiluted full flow containment exhaust exceed the acceptable limit.

A Ventilation Isolation Actuation Signal (VIAS) isolates the purge system piping to reduce the release of radioactivity from the containment to the environment in the event of a problem. A VIAS is initiated by a Containment Radiation High Signal (CRHS) signal. A CRHS is caused by an alarm on any one of the following monitors: RM-051 "Containment Noble Gas Monitor", RM-052 "Containment/Ventilation Stack Noble Gas Monitor" or RM-062 "Ventilation Stack Noble Gas Monitor." RM-052 is a swing monitor that can be aligned to sample either the containment or the ventilation stack. A VIAS actuation will cause the following plant system actions:

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	96	- 001 -	00	3 OF 5

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

1) The containment purge valves, including the mini-purge valves, close and the containment purge fans are secured.

2) The containment cooling and filtering units are shifted to the charcoal filtered mode.

3) The containment air sampling and containment pressure relief systems are isolated.

4) The control room air conditioning system is shifted to the filtered air makeup mode and both air conditioning units are started.

5) Waste gas releases are automatically terminated.

6) The control room airborne radioactivity monitor is started.

EVENT DESCRIPTION

On March 14, 1996 a planned shutdown of the Fort Calhoun Station was initiated to repair a leaking Control Element Drive Mechanism (CEDM) seal. During the shutdown the seal on CEDM number 15 failed creating a small Reactor Coolant System (RCS) leak in the containment. The leak rate was calculated to be about 5 gallons per minute. The combination of the RCS leak and higher than normal RCS activity, due to leaking fuel pins, resulted in elevated airborne radiation levels in the containment.

On March 17, 1996 at 2245, with the plant shutdown in mode 4, containment pressure was reduced using OI-VA-1 "Containment Heating, Cooling and Ventilation Systems Normal Operation," Attachment 7. The containment pressure reduction was initiated to reduce containment pressure to atmospheric prior to starting a containment purge. The containment pressure reduction was secured at 0056 on March 18, 1996 with containment pressure reading approximately -0.04 pounds per square inch gauge (psig) on narrow range containment pressure indicator PI-785.

A containment purge (OI-VA-1, Attachment 8) was then initiated per Containment Release Permit 96014. At 0109, on March 18, 1996, the containment purge air inlet and outlet isolation valves and the purge air bypass dilution valve were opened. Containment pressure began to decrease slightly and the auxiliary building ventilation stack radiation monitors RM-052 and RM-062 readings began to increase slightly. Radiation monitors RM-052 and RM-062 went from readings in the hundreds of counts per minute (cpm) to readings of a few thousands of cpm. At approximately 0112 the containment purge air supply fan VA-24A discharge damper and the containment purge air discharge

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	96	- 001 -	00	4 OF 5

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

fan VA-32A inlet damper were throttled open 25%, per procedure. After these dampers were opened the containment pressure decrease slowed and stack radiation monitor readings began to decrease, but, not back to their initial levels. At approximately 0115 the containment purge fans were started, per procedure, which resulted in a VIAS. Following initiation of the purge, RM-052, which was set to trip at 20300 counts per minute (cpm), peaked at 29197 cpm and RM-062 peaked at 27723 cpm, Auxiliary Building Ventilation Stack flow increased from approximately 56,000 cubic feet per minute (cfm) to approximately 92,000 cfm, and containment pressure dropped approximately 0.16 pounds per square inch (psi). The VIAS actuated as designed. Plant systems operated as expected. At 0320, March 18, 1996, the NRC Operations Center was notified of an Engineered Safeguards Actuation (ESF), the VIAS trip, in accordance with 10 CFR 50.72(b)(2)(ii).

This report is being submitted pursuant to 10 CFR 50.73(a)(2)(iv).

SAFETY ASSESSMENT

The VIAS actuation operated as designed and the release was not in excess of either technical specifications limits or regulatory limits. It cannot be determined if any regulatory limits would have been exceeded had VIAS failed to actuate.

CONCLUSIONS

The root cause of this event was determined to be inadequate procedural guidance. Procedure OI-VA-1 Attachment 8 "Containment Purge Release" requires the containment purge fan dampers be set at 25% to 50% open when the containment purge fans are started. This damper configuration resulted in the excessive purge flow that caused the high activity levels that tripped VIAS.

A contributing cause to this event was a lack of communications between the operating crew and the chemistry group. Prior to initiating the containment purge several individuals had indicated that they were concerned about the possibility of accidentally actuating VIAS during a release. The chemists did not appear to understand the limitations the operating procedure placed on the operator during a containment purge. A pre-job briefing which included representatives from the chemistry group was not required or conducted for this evolution. A pre-job briefing would have facilitated understanding between the groups and ensured that all of the personnel involved understood the evolution and concerns prior to the release.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fort Calhoun Station Unit No. 1	05000285	96	- 001 -	00	5 OF 5

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

CORRECTIVE ACTIONS

The radiological release permit form has been modified to allow the use of the containment mini-purge system during containment purges. The operating crews have been directed that should a similar situation occur the mini-purge system should be used to establish the containment purge. Using the mini-purge system will ensure that the containment purge rate is low enough to minimize the possibility of this type of incident from occurring until the following institutional changes can be accomplished.

1) Chemistry will evaluate the feasibility of setting a containment airborne radioactivity limit above which the containment mini-purge system will be required to be used. This evaluation will be completed by August 2, 1996. Any necessary procedure changes will be completed by August 31, 1996.

2) Operations will revise the containment purge procedures to initiate containment purges at lower release rates. In addition Operations will revise the containment purge procedures to require a pre-job briefing prior to an initial containment purge. These procedure revisions will be completed by August 31, 1996.

3) Plant chemistry personnel will be trained on this event and lessons learned. This training will be completed by September 20, 1996.

4) Plant operations personnel will be trained on this event. The training will include selected industry operating experience information. This training will be completed by September 13, 1996.

PREVIOUS SIMILAR EVENTS

In 1985 VIAS actuated during the initiation of a containment purge. This was reported in LER 85-007. The cause of this event was determined to be high containment pressure. Containment pressure was at 1 psig when the purge was initiated. The corrective action stated in this LER was to review the containment purge procedure in regard to this LER and revise as necessary. Although not specifically noted as a corrective action related to LER 85-007, a past revision to OI-VA-1, from the 1985 time frame was found which revised the containment pressure drop procedure to ensure containment pressure was reduced to atmospheric prior to starting a containment purge.