

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

February 26, 1992  
LIC-92-052L

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 92-002 for the Fort Calhoun Station

Please find attached Licensee Event Report 92-002 dated February 26, 1992. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B). 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  
D. L. Wigginton, NRC Senior Project Manager  
R. P. Mullikin, NRC Senior Resident Inspector  
S. D. Bloom, NRC Project Engineer  
INPO Records Center

020005

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) 05000285 PAGE (3) 1 OF 04

TITLE (4) Compromise of Containment Integrity Due to Personnel Air Lock Door Seal Leakage

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
01	27	92	92	002	00	02	26	92	N
								DOCKET NUMBER(S) 050000	

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.73 (Check one or more of the following) (11)

20.402(b)	20.405(e)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.73(a)(1)	50.73(a)(2)(v)	73.71(c)
20.405(a)(1)(ii)	50.73(a)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstrac below and in Text, NRC Form 306A)
20.405(a)(1)(iii)	X 50.73(a)(2)(f)	50.73(a)(2)(vii)(A)	
20.405(a)(1)(iv)	50.73(a)(2)(g)	50.73(a)(2)(vii)(B)	
20.405(a)(1)(v)	50.73(a)(2)(j)	50.73(a)(2)(viii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Scott A. Lindquist, Shift Technical Advisor TELEPHONE NUMBER 402 513 3161 8219

COMPLETE C-4E LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC'S	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC'S

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 January 27, 1992, with Fort Calhoun Station operating at 75 percent power (Mode 1), the inner containment Personnel Air Lock (PAL) door failed to meet the acceptance criteria of the PAL O-ring seal surveillance test. This failure to meet the acceptance criteria indicated leakage through at least one of two seals on the inner door. The outer PAL door was open at the time to allow access to the inner door for testing. With the outer door open and the inability to verify containment integrity was satisfied by the inner door, the condition was considered to be a violation of Technical Specification 2.6.(1)a. This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B).

The root cause of this event was condensate from nearby component cooling water piping dripping onto the inner PAL door bulkhead structure and upper latch bolt bracket causing surface corrosion. An approximately 3/8-inch by 3/8-inch by 1/64-inch flake of corrosion product was found between the flexible circumferential seal and its mating seal rod which caused the leak.

This event did not present a significant hazard to the health and safety of the public due to the extremely low probability of a design basis accident occurring when the outer PAL door was open.

Corrective actions have been taken which allow testing of the inner PAL door seal with the outer PAL door closed.

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-520), 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	LER NUMBER (3)			PAGE (4)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9   2	-   0   0   2	-   0   0	0   2	OF   0   4

TEXT (If more space is required, use additional NRC Form 308A's)(17)

The Personnel Air Lock (PAL) is a welded steel assembly consisting of a cylindrical barrel with attached thickened insert plate, a steel floor and a bulkhead at each end. Each bulkhead contains a steel door with dual O-ring seals. The air lock, including both doors, was designed to withstand all containment design conditions with one or both doors closed. Each door opens inward so that any overpressure within containment will tend to seal the door against its O-ring seals. The doors are mechanically interlocked to ensure that one door cannot be opened until the other door is closed. Pressure equalizing valves and gauges are provided as well as visual indication outside each door to show the status of doors and valves. An alarm annunciates in the control room if either one of the doors of the air lock system is not completely closed.

Technical Specification 3.5(3) requires the seals on the PAL doors to be tested in accordance with 10CFR50 Appendix J, Type B leak rate testing at 5 psig after each opening or every 72 hours, whichever is less frequent. The entire PAL assembly is tested at six month intervals, and within two weeks of conditions that require containment integrity, at a minimum design pressure of 60 psig. The testing of the PAL door seals is accomplished using a permanent test panel (AI-213) that is installed in the Auxiliary Building just outside the PAL. At the time of the event, testing of the inner door required the outer door to be open.

Technical Specification 2.6.(1)a does not allow violation of containment integrity unless the reactor is in the cold shutdown condition. The Fort Calhoun Station Technical Specification definition of containment integrity includes the requirement that at least one PAL door be properly sealed and closed.

During power operation on January 27, 1992, the required performance of the 5 psig Type B leak rate surveillance test of the inner PAL door was accomplished. The test determined that at least one of the two seals on the inner door was leaking in excess of the acceptance criteria. The door was declared inoperable. The outer PAL door was open during the testing to allow access to the inner door test connections. The testing configuration had been recently revised due to seismic considerations, as reported in LER 91-031. Thus, containment integrity could not be verified until the outer PAL door could be closed. As a result Technical Specification 2.0.1 was entered. The outer door was closed and successfully leak tested, and containment integrity was restored within minutes of the discovery and Technical Specification 2.0.1 was exited.

On January 29, 1992, Omaha Public Power District requested a 24 hour waiver of compliance from the provisions of Technical Specification 2.6.(1)a effective at 0800 on January 31, 1992. The 24 hour period was consistent with the provisions of Standard Technical Specifications for containment air locks and allowed reasonable time to repair the inner PAL door seals. On January 30, 1992, the requested waiver was granted and on January 31, 1992, the inner PAL door was repaired and successfully leak tested. During repair of the seal an approximately 3/8-inch by 3/8-inch by 1/64-inch flake of corrosion product was found between the flexible circumferential seal and its mating seal rod.

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-500), 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 (3)			PAGE (4)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		9   2	-   0   0   2	-   0   0	0   3	OF 0   4

TEXT (If more space is required, use additional NRC Form 308A's)(17)

This event did not present a significant hazard to the health and safety of the public due to the small probability of a design basis accident occurring during the brief periods that the outer PAL door was open. The Probabilistic Risk Assessment calculated probability per-minute time for a Loss of Coolant Accident (LOCA) and a Main Steam Line Break/Feedwater Line Break (MSLB/FWLB) is summarized below:

EVENT	PIPE SECTION FAILURE PROBABILITY	PIPE LENGTH FAILURE PROBABILITY
LOCA	4.94 E-9	5.36 E-9
MSLB/FWLB	5.13 E-9	7.45 E-9

Even in the event of an accident, minimal leakage would have been expected due to the small size of the flake of corrosion which was found to have caused the leakage during the surveillance test. Also, the flake of corrosion would have affected only one of the two inner PAL door O-rings. Test personnel were present for the duration of the test to close the outer door if it had been required.

The root cause of this event was surface corrosion of the PAL door bulkhead structure and upper latch bolt bracket due to condensate dripping from component cooling water piping located above the PAL door bulkhead. During repair of the PAL door seal a flake of corrosion product was found in the seal. This flake apparently fell into the seal when the door was either being opened or closed.

The following corrective actions have been completed:

1. On February 1, 1992, following modification of the PAL door seal testing components to address the seismic concerns reported in LER 91-031, the PAL door seal testing procedure was revised to require testing of both inner and outer door seals with the outer PAL door closed (method in use prior to LER 91-031).
2. A Fort Calhoun Station Technical Specification change request has been prepared which incorporates the applicable provisions of the Standard Technical Specifications for containment integrity and air locks. This Technical Specification change is intended to provide OPPD with the flexibility to access and repair the PAL door seals in the future without the need for a temporary waiver of compliance. The proposed Technical Specification change was submitted to the Nuclear Regulatory Commission on February 13, 1992 (LIC-92-021A).

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 20545, 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 (3)			PAGE (3)		
		YEAR 9   2	SEQUENTIAL NUMBER 0   0   2	REVISION NUMBER 0   0			
					0   4	OF	0   4

TEXT (If more space is required, use additional NRC Form 899A's)(17)

The following corrective actions will be completed:

1. The corrosion products on the PAL door bulkhead support structure will be removed by the end of the current refueling outage.
2. OPPD will evaluate the possibility of installing a deflector shield above the inner PAL door (containment side) to prevent accumulation of water on the PAL door assembly. This evaluation will be completed by April 30, 1992.

LER 81-004 documented an event in which the seals of both the inner and outer PAL doors failed to meet surveillance test acceptance criteria. LER 91-031 and LER 91-029 document two other recent events related to the PAL.