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November 22, 1989

10 CFR Part 50
Section 50.73

Director of Nuclear Reactor Regulation
U S Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Failure of Unit 2 Maintenance Airlock To
Pass the Volumetric Leakage Rate Test

The Licensee Event Report for this occurrence is attached.

Please contact us if you require additional information related to this event.

Thomas M Parker
Manager
Nuclear Support Services

c: Regional Administrator - Region III, NRC
NRR Project Manager, NRC
Senior Resident Inspector, NRC
MPCA
Attn: Dr J W Ferman

Attachment

8911280357 891122
PDR ADOCK 05000306
S PDC

LICENSEE EVENT REPORT (LER)

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 (F-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) **Prairie Island Nuclear Generating Plant Unit 2** DOCKET NUMBER (2) **05000306** PAGE (3) **1 OF 04**

TITLE (4) **Failure of Unit 2 Maintenance Airlock To Pass the Volumetric Leakage Rate Test**

EVENT DATE (5)			L/R 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)
10	23	89	89	003	00	11	22	89	Prairie Island Unit 1		05000282
											05000111

OPERATING MODE (9) **N**

POWER LEVEL (10) **100**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.406(c)	<input type="checkbox"/> 60.73(e)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.406(a)(1)(i)	<input type="checkbox"/> 60.36(e)(1)	<input type="checkbox"/> 60.73(e)(2)(v)	<input type="checkbox"/> 73.71(c)
<input type="checkbox"/> 20.406(a)(1)(ii)	<input type="checkbox"/> 60.36(e)(2)	<input type="checkbox"/> 60.73(e)(7)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
<input type="checkbox"/> 20.406(a)(1)(iii)	<input checked="" type="checkbox"/> 60.73(a)(2)(i)	<input type="checkbox"/> 60.73(e)(2)(viii)(A)	
<input type="checkbox"/> 20.406(a)(1)(iv)	<input type="checkbox"/> 60.73(a)(2)(ii)	<input type="checkbox"/> 60.73(e)(2)(viii)(B)	
<input type="checkbox"/> 20.406(a)(1)(v)	<input type="checkbox"/> 60.73(a)(2)(iii)	<input type="checkbox"/> 60.73(e)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME **Arne A Hunstad, Staff Engineer** TELEPHONE NUMBER **612 388-1121**

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS		
X	B	D	S	F	A	L	X	9	9	9	X

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR

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

On October 23, 1989, Unit 2 was operating at 100% power. While performing the surveillance test SP 2136, Volumetric Leakage Rate Test of Unit 2 Maintenance Airlock, the measured leakage rate exceeded the Technical Specifications' limit. The leak was determined to be through the seal of a handwheel shaft at the outer door. Soap testing at the inner door revealed no visible leakage. The outboard Grafoil packing was repaired by tightening a loose packing nut. The surveillance test SP 2136 was then successfully completed with an acceptable leakage rate.

Cause of the event was the wear of the Grafoil packing due to the high frequency of door usage during refueling shutdowns followed by relaxation of the packing during periods of non-usage, coupled with the inadequate preventive maintenance of the packing because of inadequate procedures.

The preventive corrective action will be to modify the containment airlocks surveillance test procedures prior to the next refueling outage. The containment airlock volumetric leakage rate surveillance test procedures will be revised to require inspection for proper adjustment of packing nuts on door shaft seals prior to startup following an extended outage. Repairs would only be allowed provided "As Found" test data is obtained.

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 (F-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) Prairie Island Unit 2	DOCKET NUMBER (2) 0500030689	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		89	003	00	02	OF 04

TEXT (If more space is required, use additional NRC Form 386A's) (17)

EVENT DESCRIPTION

On October 23, 1989, Unit 2 was operating at 100% power. While performing the surveillance test SP 2136, Volumetric Leakage Rate Test of Unit 2 Maintenance Airlock, the measured leakage rate exceeded the Technical Specifications' limit. The outer door was inspected and audible leakage was heard through the lower handwheel shaft.

The seals (EIS Component Code: SEAL) on the Maintenance Airlock handwheel shafts were replaced on February 11, 1988. Grafoil packing has been used for the shaft seals since the early 1980's in order to meet environmental qualification requirements. The outboard seals were proven satisfactory on February 17, 1988, August 8, 1988, and December 12, 1988.

During the refueling shutdown of March and April of 1989, this airlock experienced a high number of cycles. This caused additional wear on the Grafoil packing. On April 18, 1989 the outboard seals were again proven satisfactory. It is not known if the packing was adjusted, as was normal practice, prior to this test.

On October 23, 1989, the leakage was identified during the surveillance test. At this time, the Maintenance Airlock (EIS Component Code: AL) was locked, chained, and a Secure Card hung. Shortly thereafter, a containment entry was made through the Personnel Airlock. The inner door and handwheel shaft seals of the Maintenance Airlock were then visually inspected and soap tested and it was determined that there was no leakage through the inner door.

CAUSE OF THE EVENT

The cause of this event is believed to be that the adjusting of the packing on the outdoor seal was not required by plant procedures. It was previously known that the packing needed to be adjusted following periods of extended use and it was routine for plant maintenance personnel to make this adjustment prior to the last test of the airlock prior to startup from cold shutdown. However, the adjustment was not required by procedure, nor the method for adjustment specified, nor the adjustment documented. Therefore, it is not known if the adjustment was performed at the end of the last refueling outage in April 1989 or, if it was performed, whether it was done adequately. The high use caused packing wear and this did not affect the sealing capability of the packing until the packing had relaxed over the period of time between April 18 and October 23, 1989. Thus, it is believed that the root cause is the failure to adequately perform the necessary maintenance due to the deficient procedure.

LICENSEE EVENT REPORT (LER)
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FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

Prairie Island Unit 2

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YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
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03 OF 04

TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 306A (17)

ANALYSIS OF THE EVENT

The measured leakage rate for the initial "As Found" test was determined to be 16,500 standard cubic centimeters per minute (SCC/Min). This exceeds the Technical Specification (TS 4.4) allowable value of 12,900 SCC/Min.

Total containment allowable leakage for Type B and C testing (TS 4.4) was not exceeded as shown by the following:

April 1989 Refueling Outage:
 Total Containment Leakage
 Type B and C Test 18,430 SCC/Min

October 25, 1989 Six-Month Surveillance:
 Maintenance Airlock Type B Test 16,500 SCC/Min

Total Measured Leakage 34,930 SCC/Min

Total Containment Allowable Leakage
 Type B & C Tests (TS 4.4): 60% L_m 154,800 SCC/Min

Thus, the total measured leakage of 34,930 SCC/Min is less than the total containment allowable leakage of 154,800 SCC/Min.

In addition, soap testing determined there was no leakage from the airlock inner door and shaft seals. Therefore, the potential for the airlock leakage to be released to the annulus would have been during a containment entry at the point in time when the inner door was open and the outer door was closed. In addition, a pressure differential across the outer door would have been necessary to create this leakage path. Any leakage would have been collected and monitored via the shield building ventilation system.

In conclusion, based on the above, this event had no effect on the health and safety of the public.

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FACILITY NAME (1) Prairie Island Unit 2	DOCKET NUMBER (2) 050003016	LER NUMBER (6)		PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		89	0013	00	04 OF 04

TEXT (If more space is required, use additional NRC Form 288A's) (17)

CORRECTIVE ACTION

The outboard Grafoil packing was repaired under a work request. The repair involved tightening the packing nuts on the lower outboard seal. The surveillance test, SP 2136, was successfully repeated with an acceptable leakage rate of 3,324 SCC/Min on October 25, 1989.

The containment airlock volumetric leakage rate surveillance test procedures will be revised to require inspection for proper adjustment of packing nuts on door shaft seals prior to startup following an extended outage. The procedures will require appropriate readjustment if necessary. Repairs would only be allowed provided "As Found" test data is obtained. The revisions will be made prior to the next refueling outage for the applicable unit.

FAILED COMPONENT IDENTIFICATION

Chicago Bridge and Iron airlock; Grafoil packing, size 7/8" x 1 3/8"

PREVIOUS SIMILAR EVENTS

Previous similar events were reported as Unit 2 Reportable Occurrences 83-04 and 83-20.