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AUTH.NAME AUTHOR AFFILIATION
CROOK,D. Carolina Power & Light Co.
MORGAN,R.E. Carolina Power & Light Co.
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SUBJECT: LER 90-006-00:on 900318,brech of containment integrity due failure of personnel air lock door.

W/9 ltr.

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(10 CFR 50.73)

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261
LICENSE NO. DPR-23
LICENSEE EVENT REPORT 90-006-00

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted in accordance with 10 CFR 50.73 and NUREG-1022 including Supplements No. 1 and 2.

Very truly yours,

R. E. Morgan
General Manager
Robinson Nuclear Project Department

RDC:dwm

Enclosure

cc: Mr. S. D. Ebneter
Mr. L. W. Garner
INPO

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Enclosure to Serial: RNPD[redacted]-1302

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2	0 5 0 0 0 2 6 1	1 OF 0 5

TITLE (4)
BREACH OF CONTAINMENT INTEGRITY DUE TO FAILURE OF THE PERSONNEL AIR LOCK DOOR

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	1 9	9 0	9 0	— 0 0 6	— 0 0	0 4	1 8	9 0		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 6 0	20.402(b)	20.405(c)	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)	X 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
David Crook, Senior Specialist - Regulatory Compliance	AREA CODE 8 0 3 — 3 8 3 - 1 1 7 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
B	B D	A L	3 1 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO				

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

On March 18, 1990, Unit No. 2 was operating at 60 percent power. Licensee Operations personnel received an alarm on "A" Penetration Pressurization System (PPS) header flow. Due to previous occurrences, containment personnel air lock inner door leakage was suspected to be the cause. On March 19, 1990, Licensee Maintenance personnel entered the containment personnel air lock to repair the inner door seal. The Licensee entered Plant Technical Specification 3.0 in order to enter the airlock. Repairs to the inner door seal and latch mechanism were made, and the air lock was returned to service.

An investigation into the cause of the leakage has been initiated, but the root cause has not yet been confirmed.

This LER is submitted pursuant to 10CFR50.73(a)(2)(i)(B).

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2	0 5 0 0 0 2 6 1	9 0	— 0 0 6	— 0 0	0 2 OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. Description of Event

On March 18, 1990, Unit No. 2 was operating at sixty percent power.[1] At 2339 hours, Licensee Operations personnel received an alarm on "A" Penetration Pressurization System (PPS) Header flow. Due to previous occurrences (Reference LER-90-004-00), containment personnel air lock leakage was suspected as the cause. PPS to the air lock was isolated to investigate for leakage. This action confirmed that the leakage source was the air lock. PPS to the air lock was then restored. The exterior of the outer air lock door was then leak checked, and no leakage was found. This indicated that the leakage source was at the inner air lock door. PPS to the air lock was again isolated.

On March 19, 1990, at 1020 hours, Licensee Operators restored PPS to the air lock to facilitate troubleshooting. At 1346 hours, Technical Specification 3.0 was entered, and the outer air lock door was opened to further investigate the leakage source. The leakage source appeared to be at the inner door seal, which was "bulged" out from its seating surface.[2] In addition, the door latch plate appeared to have slipped slightly. At 1424 hours, the containment personnel air lock was secured, and Technical Specification 3.0 was exited. The Licensee then initiated an investigation into the possible causes of the leakage, and to formulate necessary corrective actions.

At 1639 hours on March 19, 1990, Licensee Operators entered Technical Specification 3.0 in order to enter the containment air lock to affect repairs. The inner door seal was returned to its correct position, and the door latch plate was re-aligned. At 1740 hours, the repair effort was completed, the air lock was secured, and Technical Specification 3.0 was exited.

This report is submitted pursuant to 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the Plant's Technical Specifications.

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[1]H. B. Robinson Unit No. 2 is a Westinghouse Pressurized Water Reactor nuclear power plant in commercial operation since March, 1971.

[2] Containment Personnel Air Lock EIIS Codes: System-BD; Component-AL; Manufacturer-310.

*U.S.GPO:1988-0-624-638/455

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2	0 5 0 0 0 2 6 1	9 0	— 0 0 6	— 0 0	0 3 OF 0 5

TEXT (If more space is required, use additional NRC Form 366A's) (17)

II. Cause of Event

The investigation into the root cause of this condition revealed several causal factors. The factors are described as follows:

1. Frequency of Containment Entries

Past practices at H. B. Robinson have included containment entries on a daily to weekly basis. Present practices, which were implemented during mid-1989, limit routine entries to a monthly basis. A small PPS leak into the air lock will increase internal air lock pressure to the point that the interior door could be pushed off its seals, thus increasing the leakage rate and eventually moving the latch plate. The air lock manufacturer suggests that the latch would not withstand more than 8-10 psi before it would slip. Frequent containment entries would relieve air lock pressure, and thus prevent pressure build-up. Longer time intervals between entries could allow pressure to increase past the capacity of the latch plate bolts to allow slippage.

2. Ball Valve and Shaft Seal leakage repairs

In December, 1989, the ball valves used to relieve pressure from each air lock door were refurbished to eliminate excessive valve leakage (reference LER-89-015-00). During this repair effort, shaft seal leakage was identified, and repairs were affected. These small leakage paths may have provided sufficient pressure relief from the interior of the air lock, thus preventing pressure build-up.

3. Containment Pressure Relief

Each case of "A" PPS pressure exceeding scale has been closely preceded by a containment pressure relief. Pressure build-up in the containment vessel would force the interior door onto its seals, while air lock pressurization would be forcing the door off its seals. The loss of pressure from the containment during a pressure relief would increase the differential pressure across the door, and therefore would unseat the seal. An increase in the frequency of containment pressure reliefs may be indicative of excessive door seal leakage into the containment vessel.

*U.S.GPO:1988-0-624-638/455

4. Continuous Pressurization of the Door Seals

H. B. Robinson is one of the few plants that continuously pressurizes the space between the double gasket door seals with 42 psi PPS pressure, and has operated in this manner since 1971. If previous door leakage paths (ball valves, shaft seals, frequent containment entries, etc.) were providing relief, the elimination of these leakage paths, combined with the continuous pressurization of the door seals, could cause the door seals to eventually slip.

Data has been collected in an attempt to identify any relationship between containment pressure relief, containment entries, and the door leakage episodes. Analysis of this data indicates that a relationship between these factors exists; however, due to the limited amount of data available, the nature of this relationship has not been well defined. Therefore, although probable causes of this condition have been identified, the root cause has not yet been confirmed.

III. Analysis of Event

Technical Specification 3.6.1.a states that Containment Integrity shall not be violated unless the reactor is in cold shutdown condition. Technical Specification 1.7.c states that containment integrity is defined to exist when at least one door in the personnel air lock is properly closed and sealed. The Plant was considered to be operating in a "condition prohibited by the Plant's Technical Specifications" as discussed in NUREG 1022, Supplement 1, when Technical Specification 3.0 was entered on March 19, 1990, to affect the necessary repairs.

This condition is considered to have minimal safety significance. It is unlikely that the Technical Specification limit for total containment leakage would have been exceeded (0.1 weight percent of containment volume in 24 hours) for the following reasons:

1. The PPS leakage escaped into containment via the inner door assembly when the outer door was closed. This would prevent containment atmosphere from entering the air lock.

2. Both doors are normally closed when the reactor is above 200 degrees, except for brief periods of containment inspection and minor maintenance activities. Then only one door at a time can be opened due a the mechanical interlock.

3. The door configuration is such that for both the inner and outer doors, an increase in containment pressure (i.e. during an accident) will increase sealing pressure on the door.

IV. Corrective Actions

On March 22, 1990, Licensee Operations personnel initiated a process to vent the personnel air lock once per shift in order to relieve any existing pressure build-up. Containment integrity is maintained during the venting process because at least one door is shut and sealed. This activity is considered to be a short-term measure, and will continue until the root cause is confirmed and a permanent repair is completed. A supplement to this report will be submitted after the root cause analysis has been completed and actions to preclude recurrence have been determined.

V. Additional Information

A. Failed Component Information

This condition is attributed to a failure of the containment air lock. The air lock is manufactured by Chicago Bridge and Iron Company, EIIS Codes: System-BD; Component-AL; Manufacturer-310.

B. Previous Similar Events

LER-90-004-00

LER-89-015-00

C. Commitments

A root cause analysis of this event will be completed during the 1990 Refueling Outage, when work can be performed on the air lock with the Plant in cold shutdown.

A supplement to this report will be submitted within 30 days of completion of the root cause analysis.