



Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 90-302

February 8, 1996
3F0296-11

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Licensee Event Report (LER) 96-004-00

Dear Sir:

Please find the enclosed Licensee Event Report (LER) 96-004-00. This report is submitted by Florida Power Corporation in accordance with 10 CFR 50.73.

Sincerely,

B. J. Hickle, Director
Nuclear Plant Operations

TWC:ff

Attachment

xc: Regional Administrator, Region II
Project Manager, NRR
Senior Resident Inspector

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (MNBB 7714), 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.

FACILITY NAME (1) CRYSTAL RIVER UNIT 3 (CR-3)	DOCKET NUMBER (2) 0 5 0 0 0 3 0 2	PAGE (3) 1 OF 5
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TITLE (4)
Potential Leakage Into Control Complex Habitability Envelope Above Design Limits Due to Worn and Missing Damper Components

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	1	1	2	9	6	9	6	9	6	0	0	4	0	0	0	2	0	8	9	6	N/A	0	5	0	0	0

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)											
POWER LEVEL (10) 0 0 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)(ix)						

LICENSEE CONTACT FOR THIS LER (12)

NAME S.C. Powell, Sr. Nuclear Licensing Engineer	TELEPHONE NUMBER
	AREA CODE 3 5 2
	5 6 3 - 4 6 8 3

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
B	V	I	D	M	P	J	0	9	0

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 12, 1996, Florida Power Corporation's Crystal River Unit 3 (CR-3) was in MODE FIVE (COLD SHUTDOWN). During inspection of the Control Complex Habitability Envelope (CCE) ventilation system isolation dampers, damper AHD-2 was found to have a single loose blade. The maximum opening created by this condition would result in leakage to the CCE in excess of the allowed leakage, and Control Room Operator dose limits could have been exceeded. Additional inspections determined that isolation damper AHD-12 had two missing blade seals. By itself, the leakage through AHD-12 would not have exceeded allowable leakage. This was determined to be a condition that if found while the reactor was in operation, would have resulted in the plant being in a degraded condition, and reported as such on January 16, 1996. This report is being submitted as a condition that was outside CR-3's design basis. A modification was made to correct the loose blade on AHD-2 and the missing seals were replaced on AHD-12. The cause of the loose blade is wear and the cause of the missing seal is damage during assembly. Corrective action will include implementing periodic inspection of CCE isolation dampers for leakage. In addition, an engineering evaluation will be performed to review the Control Complex ventilation system design to determine if damper replacement is recommended.

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TEXT CONTINUATION**

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

EVENT DESCRIPTION

On January 12, 1996, Florida Power Corporation's Crystal River Unit 3 (CR-3) was in MODE FIVE (COLD SHUTDOWN). Inspection of Control Complex Habitability Envelope (CCHE) isolation dampers [VI,DMP] was being performed to assess their leak tight integrity. The inspections were in response to weaknesses identified in NRC Inspection Report 95-16. During the inspection, damper AHD-2 was found to have a single loose blade. The blade appeared normal and fully closed; however, it could be easily rotated approximately 1/4 inch creating an opening of approximately 12 square inches. All other blades were securely closed. The initial evaluation of this condition concluded that this opening was less than the allowed opening size for unidentified leakage and the Habitability Envelope was, and had been, OPERABLE. On January 16, 1996, further evaluation concluded that due to the differential pressure across this damper, the potential leakage through the opening (164.2 cubic feet per minute) would exceed the allowable rate for unidentified leakage (129.3 cubic feet per minute). The allowed opening size used as a standard for comparison in the first evaluation assumed a differential pressure of 0.125 inches water gauge; however, the differential pressure used in design calculations at this damper location is 0.67 inches water gauge.

A 4-Hour Notification was made to the Nuclear Regulatory Commission (NRC) using the Non-Emergency Event Notification system at 1712 hours on January 16, 1996. The notification was made in accordance with 10CFR50.72(b)(2)(i) as a degraded condition found while the reactor was shutdown. Event Number 29843 was assigned.

Subsequent inspection of additional CCHE isolation dampers found that AHD-12 had two blades with missing edge seals. These are formed metal inserts which mate with rubber inserts on adjacent blades to seal when closed. The missing parts resulted in a total opening size of approximately 6.5 square inches with the damper in the closed position. The leakage calculated for this opening size was 82.5 cubic feet per minute (cfm). Alone, this would not exceed allowable leakage; however, since the leakage path through AHD-2 was not repaired, this event was reported to the NRC using the Emergency Event Notification system at 2152 hours on January 16, 1996 as a follow-up to Event Number 29843.

This report is being submitted in accordance with 10CFR50.73(a)(2)(ii)(B) as a condition that was outside CR-3's design basis.

EVENT EVALUATION

Dampers AHD-2 and AHD-12 are part of the Control Room Emergency Ventilation System [VI] (CREVS). CREVS isolates the Control Complex [NA] (CC) from the outside atmosphere either on detection of chlorine or sulfur dioxide gases, or if the Reactor Containment Building [NH] internal pressure exceeds 4 pounds per square inch (psi). Dampers AHD-2 and AHD-12 close in this condition.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, Use additional NRC Form 366A's (17))

The calculations for toxic gas concentrations in the Control Room and radiation dose to Control Room operators attribute a certain amount of leakage to isolation dampers. Calculations also establish that there is a margin between the total allowed leakage and the assumed amount of leakage through identified leakage paths such as doors and dampers. Leakage through AHD-2 and AHD-12 is from the inside of the Control Complex to the outside atmosphere. The greater leakage out of openings found in these dampers is conservatively assumed to cause increased leakage into the Control Complex from the outside through unidentified pathways. The leakage through AHD-2 and AHD-12 exceeded the allowable unidentified leakage which could result in slightly higher than predicted toxic gas concentrations or higher radiation dose.

The potential increase in toxic gas concentration resulting from increased leakage would be minor. This is because no actions to protect from toxic gas are credited until gas is detected at the ventilation intake, and dampers then close. The resultant intake of highly concentrated toxic gas at normal ventilation flow rates is the principal source of the gas concentration in the Control Complex. Unfiltered in-leakage contributes only a minor amount.

The potential radiation dose increases directly as unfiltered leakage increases. For the increased leakage attributed to the two leaking dampers, the 30-day thyroid dose to Control Room operators would increase from 28.2 Roentgen Equivalent Man (REM) to 39.5 REM. The currently approved dose limit is 30 REM.

CAUSE

These dampers were not previously included in a periodic preventive maintenance program. Inspection of the Control Complex isolation dampers was added to the Preventative Maintenance program as a result of NRC Regional Inspector inquiries during 1995. The inspection performed on January 12, 1996 was the first documented inspection of these dampers.

The loose blade on AHD-2 is suspected to be due to wear of the damper operating linkage. The linkage is inaccessible due to being enclosed between the damper frame and the duct in which it is mounted. Further investigation is not possible without complete disassembly of the duct and damper or cutting into the duct to expose the linkage. This condition was found only in one independent quarter section of AHD-2. Since this section has now been disabled (see Additional Corrective Action for AHD-2), no further disassembly for cause determination is planned at this time.

The missing seals on AHD-12 are suspected to be due to damage during damper assembly or installation. One seal was retrieved from the duct work. The seal cross section is shaped like the greek letter omega and the lower edges of the seal on each end were pinched together for several inches. The seal slides into a channel in the blade edge and is held in place by a slight compression of the

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

lower edges of the seal and the resulting spring forces and friction. A third seal was found in place but loose, allowing it to slide axially in the blade. It showed the same kind of deformation as the blade retrieved from the duct work. This would allow the seal to slide axially while the damper was open and then contact the damper frame when closing. If this were to occur, the seal would readily pop out of the blade. This is believed to be the reason that the other two seals were missing. The tight fit of the replacement seals leads to the conclusion that the original seals were damaged during installation allowing them to move and then be dislodged. It is not likely that undamaged seals would slide in the blade channel.

Both of these dampers are Johnson Service Company Series Model D1300 opposed blade dampers.

IMMEDIATE CORRECTIVE ACTION

The effect on the CREV System was evaluated and it was determined that since the plant was in COLD SHUTDOWN, Control Room isolation was not required. It was determined that the system must be returned to OPERABLE status prior to ascending to a higher mode. Additional damper inspections were performed which verified there is an operable isolation damper on each CREVS branch penetrating the habitability envelope.

ADDITIONAL CORRECTIVE ACTION

A modification was approved and implemented for AHD-2 which installed a cover over the section of the damper containing the loose blade. The damper is comprised of four sections each within its own frame. The cover allows the damper blades to open and close; however, no air can pass through the covered section.

The missing and loose seals on AHD-12 were replaced. The remaining seals were checked for tightness and all were satisfactory.

ACTION TO PREVENT RECURRENCE

1. An engineering evaluation will be performed of the Control Complex Emergency Ventilation System design to determine if modification or replacement of the isolation dampers is recommended. This evaluation is expected to be completed by February 29, 1996 and will consider the causes of the loose blade and missing seals noted above.
2. The requirements for inspection of CCHE isolation dampers established in the preventive maintenance program will be reviewed by March 31, 1996 to assure the frequency of inspection is adequate.

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	0 5 0 0 0 3 0 2	9 8	--- 0 0 4	--- 0 0	0 5 OF 0 5

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PREVIOUS SIMILAR EVENTS

There have been 5 previous reportable events at CR-3 involving breaches in the CCHE. Previous events were reported in LERs 90-007, 94-010, 95-001, 95-004, and 95-011. No events involved the isolation dampers.

ATTACHMENT

None