



**Florida
Power**
CORPORATION

Crystal River Unit 3
Docket No. 50-302

December 9, 1992
3F1292-07

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

Subject: Licensee Event Report (LER) 92-023

Dear Sir:

Enclosed is Licensee Event Report (LER) 92-023 which is submitted in accordance with 10 CFR 50.73.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

EEF:mag

Enclosure

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

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EXPIRES 4/30/92

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 (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)

CRYSTAL RIVER UNIT 3 (CR-3)

DOCKET NUMBER (2)

0 5 0 0 0 3 1

PAGE (3)

1 OF 0 3

TITLE (4)

Oversight In Original Appendix R Analysis Results In Operation Outside Design Basis

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)														
1	1	1	0	9	2	9	2	0	2	3	0	0	1	2	0	9	9	2	N/A	0	5	0	0	0

OPERATING MODE (9)

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (CHECK ONE OR MORE OF THE FOLLOWING: (11)

POWER LEVEL (10)

20.402(b)

20.405(c)

50.73(a)(2)(iv)

73.71(b)

20.405(a)(1)(i)

50.38(c)(1)

50.73(a)(2)(v)

73.71(c)

20.405(a)(1)(ii)

50.38(c)(2)

50.73(a)(2)(vii)

OTHER (Specify in Abstract below and in Text, NRC Form 365A)

20.405(a)(1)(iii)

50.73(a)(2)(i)

50.73(a)(2)(vii)(A)

20.405(a)(1)(iv)

X

50.73(a)(2)(ii)

50.73(a)(2)(vii)(B)

20.405(a)(1)(v)

50.73(a)(2)(iii)

50.73(a)(2)(x)

LICENSEE CONTACT FOR THIS LER (12)

NAME

W. A. Stephenson, Nuclear Safety Supervisor

TELEPHONE NUMBER

AREA CODE

9 0 4 7 9 5 - 6 4 8 6

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

Crystal River Unit 3 (CR-3) was operating at 100% of RATED THERMAL POWER on November 10, 1992. At 1400, contractor personnel determined that a discrepancy in the assumptions of the 10CFR50 Appendix R analysis constituted a condition outside the plant's design basis. The discrepancy concerned normal makeup valve, MUV-31, which functions to control makeup flow to the Reactor Coolant System (RCS) such that a predetermined level is maintained in the pressurizer. The design of MUV-31 is to fail "as-is" if fire damage results in a loss of air and/or power to the valve. The CR-3 Appendix R analysis assumed that such a failure would occur with the valve in its normal open position. During research of Appendix R background data, contractor personnel realized a scenario in which MUV-31 could close automatically following a manual isolation of RCS letdown flow. Assuming that subsequent fire damage resulted in MUV-31 failing "as-is," the valve would not be available for RCS inventory control. As a result of this event, the MUV-31 scenario will be reanalyzed to take credit for the bypass flow around the valve. Plant operations will be provided with specific options to use in the event of fire damage disabling MUV-31.

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.6 HOURS. 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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
CRYSTAL RIVER UNIT 3 (CR-3)		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
	0 5 0 0 0 3 0 2	9 2	0 2 3	0 0	0 2 OF 0 3

TEXT (If more space is required, Use additional NRC Form 365A a (17))

EVENT DESCRIPTION

On November 10, 1992, Crystal River Unit 3 was operating in MODE 1 (POWER OPERATION) at 100% of RATED THERMAL POWER. At 1400 hours, contractor personnel determined that a discrepancy in the assumptions of the plant's 10CFR50 Appendix R fire analysis constituted a condition outside the plant design basis. The event was reported to the Nuclear Regulatory Commission at 1445 via the Emergency Notification System per 10CFR50.72(b)(1)(ii)(B).

The Makeup and Purification (MU) system [CB] functions primarily to maintain chemistry and inventory control in the Reactor Coolant System (RCS) [AB], provide seal injection flow to the Reactor Coolant Pumps (RCPs) [AB,P], and to provide High Pressure Injection flow. During normal power operations, the MU system continuously removes a portion of the fluid from the RCS and directs it to purification equipment. The MU system returns fluid to the RCS via the normal makeup valve, MUV-31 [CB,LCV], and via RCP seal injection flow. Valve MUV-31 controls makeup flow to the RCS as necessary to maintain the desired level in the pressurizer [AB,PZR]. The valve provides a flow path separate from the High Pressure Injection valves [BQ,FCV]. A bypass line around MUV-31 provides approximately 15 gallons per minute (gpm) flow to the RCS via MUV-30 which is independent of the MUV-31 position.

The design of MUV-31 is such that the valve will fail "as-is" if fire damage results in a loss of air and/or control power to the valve. The plant Appendix R analysis assumed that such failure would occur while the valve was open, thus allowing the valve to provide a makeup flow path despite fire damage. During research of background data for the Appendix R analysis, contractor personnel realized that a scenario existed in which MUV-31 could fail in the closed position. The specific scenario postulated that the effects of a fire could cause operators to isolate letdown flow from the RCS before MUV-31 failed due to a loss of air and/or power. With letdown flow isolated, pressurizer level would increase. Valve MUV-31 would close in response to this increase. If MUV-31 failed "as-is" following closure, the valve would not be available for RCS inventory control. However, makeup flow would still exist via the bypass around MUV-31.

This report is being submitted in accordance with 10CFR50.73(a)(2)(ii)(B).

EXPIRES 4/30/92

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YEAR

SEQUENTIAL
NUMBERREVISION
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0 5 0 0 0 3 0 2 9 2 0 2 3 0 0 0 3 OF 0 3

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

EVENT ANALYSIS

Following failure of MUV-31, makeup flow to the RCS would still be available through the MUV-31 bypass line. Analysis of this bypass flow has determined that the flow would provide sufficient RCS inventory control provided existing RCS leakage did not exceed nine gpm.

Plant Technical Specifications discuss limits on RCS IDENTIFIED, UNIDENTIFIED, PRESSURE BOUNDARY, primary-to-secondary, and CONTROLLED LEAKAGE. Technical Specifications allow a combined total leakage of 24 gpm. However, Crystal River 3 operates well below these limits. Of the allowable 24 gpm, up to 12 gpm may be attributed to CONTROLLED LEAKAGE. This leakage is defined by Technical Specifications as "seal water flow from the Reactor Coolant Pump Seals." CONTROLLED LEAKAGE is controlled at approximately 6 gpm by flow orifices. Technical Specifications limit UNIDENTIFIED LEAKAGE to one gpm. Primary-to-secondary leakage is typically zero. IDENTIFIED LEAKAGE is typically less than one gpm. Therefore, with normal amounts of IDENTIFIED, CONTROLLED, and primary-to-secondary leakage, and with the maximum allowed amount of UNIDENTIFIED LEAKAGE, controlled plant cooldown would still be possible with MUV-31 closed.

CAUSE

The discrepancy in the Appendix R analysis was caused by an oversight in the original analysis. The analysis failed to realize that a scenario existed in which MUV-31 could fail while closed. The analysis also failed to consider the adequacy of bypass flow around MUV-31 for RCS inventory control.

CORRECTIVE ACTIONS

As a result of this event, the MUV-31 scenario will be reanalyzed to take credit for bypass flow and to address RCS makeup needs versus allowed leakage. Plant operations will be advised of the aforementioned scenario and will be provided with specific options to use in the event of fire damage disabling MUV-31 while it is serving as the primary flow path into the RCS. Additionally, FPC will incorporate the ability to shut down using only MUV-30 into the Appendix R Technical Design Basis Document.

PREVIOUS SIMILAR EVENTS

This is the first report concerning Appendix R analysis deficiencies related to MUV-31.