



**Florida
Power**
CORPORATION

Crystal River Unit 3
Docket No. 50-302

July 28, 1993
3F0793-14

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

Subject: Licensee Event Report (LER) 93-007

Dear Sir:

Enclosed is Licensee Event Report (LER) 93-007 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 5/31/86

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 1 OF 0 3

PAGE (3)

TITLE (4)

Raised Setpoint on Pressure Regulator Leads to 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)													
0	6	2	8	9	3	9	3	0	0	7	0	0	0	7	2	8	9	3	N/A	0	5	0	0	0
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)																				
POWER LEVEL (10)		1		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 306A)														
				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												TELEPHONE NUMBER												
E. E. Froats, Manager, Nuclear Compliance												AREA CODE												
												9 0 4 5 6 3 - 4 7 0 5												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC															
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR										
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO														

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

On June 17, 1993, Crystal River Unit 3 (CR-3) was in Mode 1 (POWER OPERATION) at 100% Rated Thermal Power producing 865 Megawatts. The hydrogen pressure regulator valve MUV-491 for the Makeup Tank (MUT) was found to be set above 10 pounds per square inch (psig). MUV-491 was reset to control at 10 psig. Engineering was notified that operating above the 10 psig setpoint was a suspected design basis issue. On June 28, 1993, the Nuclear Shift Supervisor was notified that the hydrogen pressure setpoint to the MUT had exceeded the Appendix R Design Basis. A 1985 Appendix R fire analysis postulated a spurious opening of the hydrogen addition solenoid operated control valve MUV-143 due to a fire induced short-circuit. This would place 50 psig overpressure on the MUT, possibly resulting in hydrogen entrainment in the Makeup Pumps (MUP) suction piping under certain drawdown conditions to compensate for system shrinkage during cooldown. MUV-491, a self-contained pressure regulating valve, was installed in the hydrogen addition line to maintain pressure at 10 psig to reduce this possibility without operator action. The setpoint for MUV-491 had been recently adjusted to increase the MUT pressure in order to improve chemistry parameters in the primary coolant. An Operations Study Book (OSB) Entry was made cautioning operations personnel that such actions may create unauthorized plant modifications.

EXPIRES 5/31/95

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER																	
CRYSTAL RIVER UNIT 3 (CR-3)		0	5	0	0	0	3	0	2	9	3	0	0	7	0	0	0	2	OF	0	3

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

EVENT DESCRIPTION:

On June 17, 1993, Crystal River Unit 3 (CR-3) was in Mode 1 (POWER OPERATION) at 100% Rated Thermal Power producing 865 Megawatts. Operators noticed a reduction in the time required to add hydrogen to the Makeup Tank (MUT) [CB,TK]. The MUT has a pressure regulating valve MUV-491 [CB,PCV] with a design setpoint of 10 psig. At approximately 18:15 on June 17, 1993, the setpoint was found to be greater than 30 psig. MUV-491 was reset to control at 10 psig. Engineering was notified to review this event as a suspected design basis issue.

On June 28, 1993, the Nuclear Shift Supervisor was notified that the hydrogen pressure setpoint had exceeded the Appendix R Design Basis. This condition is being reported in accordance with 10CFR50.73(a)(2)(ii)(B).

CAUSE:

This condition is considered to be the result of human error. An increase in the MUT hydrogen pressure has been considered desirable in order to improve oxygen removal in the Reactor Coolant System (RCS) [AB] and had been identified as an industry good practice. Several meetings and discussions had been conducted with Engineering, Operations, and Chemistry personnel in an attempt to achieve this goal. Engineering had reviewed and approved an increase in MUT overpressure but had not completed a review of the appropriate method to establish the increased pressure. Apparently an operator, regarding it as appropriate, raised the setpoint on MUV-491 before the necessary design change documents were completed.

EVENT EVALUATION:

A 1985 Appendix R fire analysis postulated a spurious opening of the hydrogen addition control valve MUV-143 [CB,FSV] due to a fire induced short-circuit. MUV-143 is a 3/4 inch solenoid control valve located in the hydrogen addition line. The analysis concluded that a fire in certain areas of the plant could cause MUV-143 to spuriously open. This would place 50 psig overpressure on the MUT, possibly resulting in hydrogen entrainment in the Makeup Pumps (MUP) [CB,P] suction piping. Spurious operations based on Appendix R concerns must be addressed by one of two ways. Actions to preclude the spurious operation must be taken, or compensatory actions must be available to mitigate the effects of the spurious operation within eight hours. MUV-491, a self-contained pressure regulating valve, was installed in the hydrogen addition line to maintain pressure at 10 psig as a way to preclude the possibility of hydrogen entrainment without the need for mitigating actions within eight hours.

The setpoint was based on a calculation that had been developed to determine the time available before both the MUT and the Borated Water Storage Tank [BP,T] reached low-low levels at certain drawdown conditions. This calculation utilized a constant 10 psig overpressure and concluded this would allow an exceptionally

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TEXT (If more space is required, Use additional NRC Form 305A's (17))

long time from an Appendix R viewpoint for an operator to isolate the MUT from the MUPs. This calculation did not determine the highest allowable overpressure setpoint.

Based on the discovery of the change in setpoint, a new Appendix R Makeup Tank Overpressure Evaluation was performed. The evaluation determined that a setpoint of more than 20 psig exceeded the Appendix R Design Basis.

The postulated spurious opening of MUV-143 by an Appendix R fire is not considered a significant possibility. Although mitigating actions would have been required if MUV-143 were to spuriously open when MUV-491 was set higher than 20 psig, either venting the hydrogen from the MUT or isolating the MUT from the MUPs would have prevented hydrogen entrainment in the MUP suction piping.

CORRECTIVE ACTIONS:

The setpoint for MUV-491 was reset. An Operations Study Book (OSB) Entry was made to increase the awareness of operations personnel for the requirements for proper documentation before making any plant modification. A modification design package has been developed to raise the pressure regulator setpoint to address the industry good practice concern.

PREVIOUS SIMILAR EVENTS:

There have been eight previous events concerning operation outside Appendix R Design requirements. This is the first such occurrence involving MUV-491.