



**Florida  
Power**  
CORPORATION

Crystal River Unit 3  
Docket No. 50-302

May 4, 1992  
3F0592-04

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

Subject: Licensee Event Report (LER) 89-022-02

Dear Sir:

Enclosed is Licensee Event Report (LER) 89-022-02 which is submitted in accordance with 10 CFR 50.73.

This supplement provides the results of additional investigation addressing the corrective actions.

Sincerely,

G. L. Boldt  
Vice President  
Nuclear Production

JAF:mag

Enclosure

xc: Regional Administrator, Region II  
NRR Project Manager  
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 (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT A-10 BUDGET, WASHINGTON DC 20503.

FACILITY NAME (1) <b>CRYSTAL RIVER UNIT 3 (CH-3)</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 3 0 2</b>	PAGE (3) <b>1 OF 0 4</b>
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TITLE (4)  
**Unknown Cause Leads To Erroneous Indication Of Loss Of Main Feedwater Pumps And Results In Manual Engineered Safety Feature Actuation**

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 N/A			DOCKET NUMBER(S) 0 5 0 0 0 0
0 8	1 4	8 9	8 9	0 2 2	0 2	0 5	0 4	9 2	N/A			0 5 0 0 0 0

OPERATING MODE (9) <b>3</b>	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)	<input checked="" type="checkbox"/>	50.73(a)(2)(v)	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 Fact. NRC Form 366A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)						
	20.405(a)(1)(iv)	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 <b>W. A. Stephenson, Nuclear Safety Supervisor</b>	TELEPHONE NUMBER AREA CODE <b>9 0 4</b> NUMBER <b>7 9 5 - 6 4 8 6</b>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On June 14, 1989, Crystal River Unit 3 was in Mode 3 (Hot Standby) nearing the end of a maintenance outage. One Main Feedwater Pump (MFWP) was supplying feedwater to the Once Through Steam Generators with the other MFWP in standby (latched). A refueling interval Engineered Safeguards (ES) actuation surveillance was in progress. At 1910, during the ES surveillance a Control Board Operator observed indications that both MFWPs had tripped. In accordance with plant procedures, he manually actuated Emergency Feedwater (EFW). This was a manual operator response to an indicated loss of both MFWPs event. Shortly thereafter the MFWP status was determined to be normal and EFW was returned to standby in accordance with plant procedures. The Main Feedwater (MFW) supervisory indicating lights went out due to an interruption of power to the supervisory circuit. Interruption of power to the supervisory circuit is an expected result of the Surveillance Test, but was not included as a note or caution in the procedure. The cautionary note has since been added. Further investigation revealed an anomaly in the feedwater flow control circuit which resulted in differential pressure and Startup (SU) flow indicating zero. This indication only occurred for 10 seconds and only appeared during the test. No additional corrective actions are planned or warranted.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	

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

**EVENT DESCRIPTION**

On June 14, 1989, Crystal River Unit 3 was in Mode 3 (Hot Standby) nearing the end of a maintenance outage. One Main Feedwater Pump [SJ,P] (MFWP) was latched and running to supply feedwater to both Once Through Steam Generators (OTSGs) [AB,SG], with the other MFWP latched and running in standby. Surveillance Procedure SP-417, "Refueling Interval Integrated Plant Response To an Engineered Safeguards [JE] Actuation", was in progress. This Surveillance Procedure had been completed for the "A" Engineered Safeguards (ES) train and preparations were complete for beginning surveillance on the "B" ES train. The test consists of introducing an ES actuation signal, followed shortly by an ES 4160 Volt ES Bus [EB,BU] undervoltage signal. This checks both the ES actuation logic and the ES 4160 Volt Bus block loading sequence.

At 1900, testing commenced on the "B" ES train. Response to the ES actuation signal was normal. When the ES 4160 Volt Bus undervoltage signal was introduced and electrical bus realignment began, the Control Board Operator (utility licensed personnel) noted that both MFWPs appeared to be tripped. All MFWP supervisory indicating lights [JK,IL] had gone out, differential pressure indication between the MFWP discharge and OTSG pressure had dropped from approximately 80 pounds per square inch differential (psid) to zero and startup feedwater flow instruments [SJ,FI] indicated zero flow to both OTSGs. In addition, several anomalous indications were noted on the Integrated Control System (ICS)[JA] feedwater control stations. Based on these indications, the Control Board Operator announced a loss of both MFWPs, manually initiated Emergency Feedwater (EFW) [BA] in accordance with the plant procedure governing loss of both MFWPs, and complied with that procedure. This event is reportable under 10 CFR 50.73.a.2.iv as a manual actuation of an Engineered Safety Feature (ESF). Following actuation of EFW, it was noted that all MFWP and ICS indications had returned to normal. Both MFWPs were still latched and all MFWP and ICS indications were as expected. Following a careful review of the status of the MFWP and ICS indications, with no discrepancies noted, EFW was secured. The Emergency Feedwater Initiation and Control System [JE] (EFIC) was reset to the normal standby status, in accordance with plant procedures, at 1920.

**CAUSE**

This ESF actuation was a manual operator response to an indicated loss of both MFWPs. This operator response was directed by plant procedures.

The loss of MFWP supervisory indicating lights was caused by an interruption of power to the supervisory circuit. It was determined that the MFWP supervisory indicating lights are powered from a bus which was temporarily

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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST IS 0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20546, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON DC 20503.

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TEXT (If more space is required, Use additional NRC Form 386A (17))

deenergized during the "B" ES electrical bus realignment and, therefore, the temporary loss of the supervisory indicating lights is expected. The MFWP/OTSG differential pressure and Startup (SU) Flow indication were caused to go to zero by an anomaly in the feedwater flow control circuit that would occur after a reactor trip resulting from emergency power being transferred from the normal supply to the Emergency Diesel Generators [EK], (EDG).

EVENT EVALUATION

Manual operator action, directed by plant procedures, resulted in actuation of the Emergency Feedwater System. The main feedwater pumps did not trip during this event so that both main and emergency feedwater were available. Therefore, secondary cooling was not jeopardized and nuclear safety remained unaffected. This particular event could not occur at power since the Surveillance procedure being performed is a refueling interval test which must be performed while the plant is shut down.

During the Surveillance Procedure performance, the reactor operator noted several anomalies. Additional testing was conducted at the end of Refuel 7 on the ICS and Non-Nuclear Instrumentation (NNI); only one anomalous behavior could be reproduced. The flow in the 'B' Feedwater Train (as indicated on the Startup Feed Flow Gauge) decreased approximately 30 percent. This behavior lasted only as long as it took the automatic control systems to transfer power from the normal supply (the 230 KV switchyard) to the EDG, that is, about 10 seconds.

In an event simulated by the Surveillance Procedure, that is a reactor trip, ES actuation and ES bus undervoltage (an EDG start), several things would happen that make the observed anomaly irrelevant. First, on a reactor trip the pressure control setpoint for the main steam system (secondary plant) is raised and a "Rapid Feedwater Reduction" circuit is activated. These two things will reduce feedwater flow to zero gallons per minute (gpm) until the Steam Generators (OTSG) boil down to low level limits. Second, on an ES actuation, the EFIC system is activated. This will start both Emergency Feedwater Pumps (EFPW). Since the EFPWs flow control valves start in the full open position, a small volume of EFW will be injected into the OTSGs while the control valves close. These things will maintain a zero gpm flow in the main and startup feedwater indicators for a period of time that is longer than it takes to fully load the EDGs. Thus, the anomaly observed during the test would not be seen during a real transient and could not effect the plant or system response during the transient. Therefore, the health and safety of the public is not affected.



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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))

CORRECTIVE ACTION

Investigation has shown that the temporary loss of MFWP supervisory indicating lights is expected during "B" ES electrical bus realignment and a precaution has been added to the procedure to assure operators are aware of the temporary loss of indication.

Because the feedwater flow indication anomaly identified has no impact on the plant response to the transient, no further corrective actions are planned or warranted.

PREVIOUS SIMILAR EVENTS

Crystal River Unit 3 has reported 28 Engineered Safety Feature actuations. This is the first event involving manual actuation following erroneous indication of MFWPs being tripped.