



**Florida  
Power**  
CORPORATION

Crystal River Unit 3  
Docket No. 50-302

July 27, 1992

3F0792-13

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

Subject: Licensee Event Report (LER) 92-12

Dear Sir:

Enclosed is Licensee Event Report (LER) 92-12 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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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-600), 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 0 2 1** OF **0 4** PAGE (3)

TITLE (4) **Inadequate Procedure Results in Isolation Of Residual Heat Removal System**

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 NUMBERS												
0	6	2	7	9	2	0	1	2	0	0	0	7	2	7	9	2	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) <b>0 0 0</b>	20.402(b)	20.405(c)	50.73(a)(2)(iv)	7.71(b)
	20.405(a)(1)(X)	50.39(a)(1)	X 50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(i)	50.39(a)(2)	50.73(a)(2)(vi)	OTHER (Specify in Abstract Section and in Text, NRC Form 308A)
	20.405(a)(1)(ii)	50.73(a)(2)(i)	50.73(a)(2)(vii)(A)	
	20.405(a)(1)(iv)	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)(viii)	

LICENSEE CONTACT FOR THIS LER (12) **W. A. Stephenson, Nuclear Safety Supervisor** TELEPHONE NUMBER **9 0 4 7 9 5 - 8 4 8 6**

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPREDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPREDS

SUPPLEMENTAL REPORT EXPECTED (14) YES  NO  EXPECTED SUBMISSION DATE: MONTH  DAY  YEAR  LATE (15)

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

On June 27, 1992 Crystal River Unit 3 was in MODE 5 (COLD SHUTDOWN) with the "A" train of Decay Heat Removal (DHR) in service. The plant had been shut down since April 30, 1992 for a scheduled refueling outage. Fuel had been recently reloaded into the reactor vessel. Instrument and Controls (I&C) Technicians were recalibrating one of the Reactor Coolant System (RCS) pressure instrument strings. The recalibration was necessitated by a recently completed plant modification. When the buffer amplifier module was removed, one of the valves in the RCS dropline closed. This isolated the suction of the operating DHR pump from the RCS. The pump was turned off to protect it. Cooling water flow to the reactor core was interrupted for approximately ten minutes while power to the instrument string was recovered. The valve was reopened and the pump was restarted.

The root cause of this event was an inadequate procedure with personnel error being a contributing factor. The procedure will be revised. Training on Engineered Safeguards (ES) and Automatic Closure Interlock (ACI) will be enhanced to improve the knowledge level of licensed operators and Instrument and Controls technicians concerning the power interlock between ES and ACI. A Human Performance Evaluation will be performed to determine corrective action for the technician's personnel error.

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 60.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)																
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER																	
CRYSTAL RIVER UNIT 3 (CR-3)		0	5	0	0	0	3	0	2	9	2	0	1	2	0	0	0	2	OF	0	4

TEXT (If more space is required, Use additional NRC Form 306A's (17))

EVENT DESCRIPTION:

On June 27, 1992 Crystal River Unit 3 was in MODE 5 (COLD SHUTDOWN) with the "A" train of the Decay Heat Removal System (DHR) [BP] in service. The plant had been shut down since April 30, 1992 for a scheduled refueling outage. Instrument and Control (I&C) Technicians were performing a surveillance procedure to calibrate one of the Reactor Coolant System (RCS) wide range pressure transmitter [JC,PT] instrument strings because its associated pressure transmitter had been relocated by a plant modification during the outage. A pre-job discussion was held between the I&C Technician and the Licensed Operators. The RCS pressure signal from this particular instrument string is used in the Engineered Safeguards (ES) [JE] System. A "NOTE" statement in the calibration procedure informed the technicians that removal of the buffer amplifier module [JC,AMP] from the instrument string would result in tripping the associated ES channel. The licensed Nuclear Operator on duty questioned the technician as to whether or not deenergizing the ES channel would cause closure of the Automatic Closure Interlock (ACI) valves [BP,ISV] in the Decay Heat Removal Pump (DHP) [BP,P] suction line. The technician examined the applicable drawings and incorrectly determined there should be no effect on the ACI valves and informed the operators to that effect.

When the technician pulled the buffer amplifier [JC,BUF/AMP] from the instrument string, the appropriate alarms were received and acknowledged by the control board operators. Approximately 15 seconds later, one of the ACI valves, DHV-3 [BP,ISV], began to close. Because the operators were diligently watching for problems which might arise during performance of the surveillance procedure, the valve motion was immediately noted by the control board operator and announced to the control room personnel. The running Decay Heat Removal Pump (DHP-1A) was immediately secured to prevent damage to the pump from loss of suction. RCS temperature was noted to be 98.4 degrees F according to incore thermocouple [JC,DET]. The technician was instructed to restore power to the ES channel which he did immediately. When the ACI valve reached its fully closed position, it was reopened. Personnel were cleared from the area of DHP-1A and the associated electrical switchgear in preparation for restarting DHP-1A. The pump was restarted without difficulty. RCS flow was reestablished. RCS flow had been secured for ten minutes resulting in an increase in the RCS coolant temperature of less than 5 degrees to 103.0 degrees F.

CAUSE

The root cause of this event was an inadequate surveillance procedure with personnel error being a contributing factor. The surveillance procedure involved was one used for calibration of seven RCS pressure instrument strings. Four of the strings monitor pressure on a wide range for input to the Engineered Safeguards System, two monitor pressure on a low range for input to ES, and one monitors pressure on a low range for the ACI system. The procedure provided a "CAUTION" note informing the user of the procedure that the DHV-3 bypass actuation switch

EXPIRES 4/30/92

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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 20545, 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)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
CRYSTAL RIVER UNIT 3 (CR-3)	0 5 0 0 0 0 8 0 2 9 2	0 1 2	0 0	0 3	OF 0 4

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

should be placed in "Bypass" when performing calibration of the low range RCS pressure instrument string used for ACI. That transmitter was not the one being recalibrated. No such note existed in the section of the procedure addressing the RCS wide range pressure transmitters.

A significant contributor to this event was the error of the I&C Technician in improperly reading plant drawings. The drawings adequately showed the ACI bistable would be deenergized if the ES pressure instrument string was deenergized. Although the technician investigated the potential for actuating the ACI System, he failed to fully pursue the investigation to its appropriate conclusion i.e. determine that the ACI valves would be affected.

The modules in the ES cabinet are interlocked on power supply such that if any module is removed from the cabinet, the channel power supply is interrupted. The ACI module is also part of that interlock. No one involved in the discussions knew that deenergizing the wide range instrument string would result in actuating the ACI valves. When the ACI actuation module deenergizes, it closes the ACI valve.

EVENT ANALYSIS

The actuation of ACI valves occurs to protect the low pressure DHR piping and components from high pressure originating in the RCS. No such pressure excursion occurred. The low pressure piping and system components were not exposed to pressure above normal working pressure for the system.

The ACI valves are common to both trains of DHR and therefore closure of the valve eliminated use of either train of DHR. However, the DHR systems were available in the Low Pressure Injection mode for cooling the core if needed.

This event occurred after new fuel and partially depleted fuel had been reloaded into the reactor vessel. The reloaded fuel was generating an amount of decay heat which was considerably less than the maximum generated by a recently shutdown reactor core. The closing of the dropline valve caused cooling water flow to the shutdown reactor core to be secured for approximately ten minutes. The low heat load and short duration of the cooling water flow cessation were not sufficient to result in a significant temperature increase in the fuel elements as measured by incore thermocouples. Therefore, the fuel did not suffer any adverse effects from this event. Water temperatures remained well below the boiling point for atmospheric pressure and the system remained closed to the atmosphere. There was no release of radioactivity to the atmosphere and there was no impact on the health and safety of the public from this event.

Had this event occurred immediately following the initiation of the use of DHR at the beginning of the refueling outage, the temperature increase would have been more substantial than the 5 degree increase sustained during this event. However

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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-430), 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)		LER NUMBER (6)			PAGE (3)													
			YEAR	SEQUENTIAL NUMBER	REVISION NUMBER														
	0	5	0	0	0	3	0	2	9	2	0	1	2	0	0	0	4	OF	0

TEXT (If more space is required, Use additional NRC Form 388A (17))

it is unlikely that pressure string calibration would have been initiated at that point because the modification which resulted in the need to recalibrate the string had not been completed at that time.

CORRECTIVE ACTION

The inadequate procedure will be revised. A Human Performance Enhancement System (HPES) analysis will be performed to determine appropriate corrective action for the personnel error involved. Training will be enhanced to assure that all licensed Nuclear Operators and Instrument and Controls Technicians are aware of the power interlock between ES and ACI.

PREVIOUS OCCURRENCES

Crystal River Unit 3 has produced four previous Licensee Event Reports (LERs) on loss of Decay Heat Removal. Those were LERs 86-02, 86-03, 88-22, and 89-31. Only LER 88-22 involved the ACI System and it was not associated with surveillance performance.