



**Florida
Power**
CORPORATION

Crystal River Unit 3
Docket No. 50-302

3F0391-06
March 8, 1991

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

Subject: Licensee Event Report (LER) 90-016-01

Dear Sir:

Enclosed is Licensee Event Report (LER) 90-016-01 which is submitted in accordance with 10 CFR 50.73.

This supplement includes additional information relative to the investigation and evaluations performed.

Sincerely,

G. L. Boldt
Vice President
Nuclear Production

WLR:mag

Enclosure

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

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTOR REQUEST: 500 HRS. 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) CRYSTAL RIVER UNIT 3		DOCKET NUMBER (2) 05000302	PAGE (3) 1 OF 3
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TITLE (4) Improper Wire Termination Causes Inadvertent De-energizing of Instrumentation and Control Power When Contacted Resulting in Automatic Actuation of Emergency Feedwater

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	0	9	9	0	016	0	1	03	08	9	1	N/A	050000
												N/A	050000

OPERATING MODE (9) 3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)										
POWER LEVEL (10) 000	20.402(b)	<input checked="" type="checkbox"/>	20.405(c)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>			
	20.405(a)(1)(ii)	<input type="checkbox"/>	50.36(e)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	73.71(e)	<input type="checkbox"/>			
	20.405(a)(1)(iii)	<input type="checkbox"/>	50.36(e)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Text, NRC Form 366A)				
	20.405(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)	<input type="checkbox"/>					
	20.405(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)	<input type="checkbox"/>					
	20.405(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)	<input type="checkbox"/>					

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME W. K. BANDHAUER, NUCLEAR OPERATIONS SUPERINTENDENT		AREA CODE 9104	NUMBER 719151-164816

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	
A	EE	R	X							

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO				

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

On October 10, 1990, Crystal River Unit 3 was in Mode 3 when a loss of Non-Nuclear Instrument (NNI-X) power occurred. The event transpired during corrective maintenance on a redundant NNI-X power supply. During the maintenance, an Instrument and Control technician inadvertently contacted a power sensing wire, breaking a connection at the terminal block. This caused the power supply monitor to sense a false loss of voltage. Subsequently, the monitor opened the power supply input breakers causing an actual loss of power. Because preplanning identified the loss of power as a possible occurrence, technicians and operators were briefed before the job and were well prepared to handle the event.

In accordance with procedures, both main feedwater pumps were manually tripped. The emergency feedwater pumps started and the emergency feedwater system supplied feedwater to both steam generators as designed.

The power supply monitor sensing leads for the NNI-X power supply have been repaired.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. 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.

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

EVENT DESCRIPTION

On October 10, 1990, at 1207, Crystal River Unit 3 (CR-3) was in MODE 3 (HOT STANDBY) when a loss of Non-Nuclear Instrument (NNI-X) power [RJX] occurred. The Reactor Coolant System (RCS)[AB] was at 2155 psig and an average temperature of 536 degrees. The unit had been taken off line to conduct repairs on the Reactor Coolant Pump (RCP)[AB,P] oil collection system and to replace a faulty NNI-X power supply.

The work package for the replacement of the NNI-X power supply required that a temporary power supply be installed prior to de-energizing and removing the faulty power supply. During the process of connecting the temporary power supply, an Instrument and Control (I&C) technician inadvertently contacted a power sensing wire on the operating NNI-X power supply. The wire broke at its connection point to a terminal block. This wire senses the status of the NNI-X power supply and provides this information to a power supply monitor module. When the wire broke, the power supply monitor sensed a loss of negative 24V DC NNI-X power. The power supply monitor subsequently opened both input breakers as designed, causing a complete loss of NNI-X DC voltage.

The licensed operators were prepared for this occurrence through pre-job planning and immediately identified the loss of NNI-X power and acted in accordance with plant emergency operating procedures.

At 1208, both main feedwater pumps [SJ,P] were manually tripped from the control room by the licensed operator. The Emergency Feedwater Initiation and Control (EFIC) [JG] system automatically actuated the Emergency Feedwater (EFW) System [BA]. The EFW system provided feedwater to both steam generators [SG] and maintained the required level.

NNI-X power was regained and restoration begun at 1230 when the I&C technician connected the power sensing wire back to the terminal block. The licensed operators restored the main and emergency feedwater systems to a normal lineup. At 1237, main feedwater was established to both steam generators. The EFIC system was reset and EFW to both steam generators was secured. The final stable plant conditions were RCS pressure 2155 psig and an average temperature of 536 degrees.

CAUSE

The immediate cause of this event was that the I&C technician inadvertently contacted and broke the power sensing wire. This initiated the loss of the NNI-X power supply. Although the power sensing wire is a very small gauge, it should not have broken because of the slight pressure which was placed upon it. Investigation revealed that a butt splice lug placed on the end of the wire to allow it to fit in the terminal block was crimped. Crimping the butt splice placed excessive stress at the connection point. It is at this connection point that the wire broke. Therefore, the root cause of this event was personnel error when the power supply sensing lead was over-crimped at some previous time.

LICENSEE EVENT REPORT (LER)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

EVENT ANALYSIS

At 1514 a four-hour verbal report of this event was provided to the NRC Operations Center per 10CFR50.72(b)(2)(ii) requirements. This written report is being provided per 10CFR50.73(a)(2)(iv) due to the automatic initiation of the Emergency Feedwater Initiation & Control System (EFIC).

In anticipation of the NNI-X power supply replacement, Operations personnel identified specific requirements to be addressed prior to commencing the work package. Vital equipment alignment was performed. Interlocks that would be inoperable upon a loss of NNI-X were identified. Alternate means of controlling RCS temperature were established. Specific valves and pumps were placed in manual control. Additionally, the loss of NNI-X emergency operating procedure was reviewed by all operating crews.

Although, the loss of the NNI-X power supply rendered many control room instruments inoperable, there were many redundant instruments available to the control room operators to monitor core conditions and balance of plant equipment. There was no appreciable change in the RCS parameters or major equipment operation during this event; therefore, there were no safety consequences as a result of this event.

If this event had occurred at 100% power, the licensed operators would still have tripped both main feedwater pumps. The tripping of both main feedwater pumps would consequently cause a reactor and main turbine trip. The EFIC system would actuate due to the tripping of both main feedwater pumps and the EFW system would start. The EFW system would supply both steam generators with the required feedwater to remove decay heat from the reactor core.

CORRECTIVE ACTION

The power supply monitor sensing leads for NNI-X were repaired. The butt splices were soldered in place instead of crimping. Work requests have been initiated to perform this same work on the NNI-Y and ICS power supplies during the Mid-cycle outage. The personnel error issue relative to crimping has been investigated and evaluated. There is no previously documented evidence of solid wire failures after they have been crimped and installed. The breakage of the wire in this case is an isolated event. No further corrective action is required.

PREVIOUS SIMILAR EVENTS

There has been one previous occurrence of a loss of NNI-X power. This loss of NNI-X power occurred on February 26, 1980, with reactor power at 98.6%. This event was reported on LER 80-010.

The corrective action for the above lessened the severity of the current event but could not have prevented it.