



Crystal River Unit 3 Docket No. 50-302

> July 3, 1992 3F0792-04

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

Subject: Licensee Event Report (LER) 92-10

Dear Sir:

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

Sincerely,

ANT

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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Under Design Basis conditions due to low input voltage at the Costrol devices. This was based on a conservative electrical analysis that assumes a simultaneous Design Basis event during a degraded Grid voltage condition. FPC discovered this condition while performing reviews of safety-related motor control circuits. This is documented in FPC's "Motor Control Center/AC Distribution Panel Safety-Related AC Control Circuit Voltage Drop Calculations". This design issue resulted in a number of safety-related components being declared inoperable. The cause is that initial plant design calculations were not performed to a level of detail that would determine voltage at these control devices. To resolve this issue FPC will rewire control circuits to make use of interposing relays; utilize spare conductors in parallel; remove auxiliary relays; and replace control transformers.

86/8C F-0F8M 3885A (6-89)	U.S. NUC	EAR REGULATORY COMMISSION	APPROVED OMB NO. 3150-0104 EXPINES 4/30/92									
•	LICENSEE EVENT REPORT (L TEXT CONTINUATION	ER)	ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH INFORMATION COLLECTION RECREST 50.0 HOURS. FOR COMMENTS REGARDING BURDEN ESTIMATE TO THE FEC AND REPORTS MANAGEMENT BRANCH (P. 500). U.S. NUC REGULATORY COMMISSION, WASHINGTON, DC 2566, M THE PAPERWORK REDUCTION PREJECT (0.50-0164), OF OF MANAGEMENT AND BUDPET, WASHINGTON DC 20603							WATH THIS FORWARE REFECCIENT 5. NUCLEAR 55. AND TO 4), OFFICE 20503.	HIS ADD ADB EAR) TO ICE	
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EVENT DESCRIPTION

On June 4, 1992, Crystal River Unit 3 (CR-3) was defueled when a condition outside the Design Basis (DB) was discovered. It was determined that twenty eight safetyrelated components (Table 1) may not function under DB conditions due to low voltage at the control devices. This was based on a conservative electrical analysis that assumes a simultaneous DB event and offsite power at the minimum possible voltage without an actuation of the undervoltage relay protection. This is considered a structure outside the DB and is being reported per 10CFR50.73(a)(2)(ii)(B).

A review of the Motor Control Center/AC Distribution Panel Safety Related AC Control Circuit Voltage Drop Calculations was performed and it was determined that a potential problem existed. This calculation is part of Florida Power Corporation's Electrical Calculation Enhancement Program (ECEP). The calculation concluded the minimum voltage available to control devices associated with the twenty eight safety-related components, during a degraded grid voltage condition, may be less than required for proper operation.

The twenty eight safety-related components were declared inoperable. The Technical Specification operability requirements for the various components range from Hot Shutdown (MODE 4) to, and including, Power Operations (MODE 1).

CAUSE

There are two main contributors which cause the excessive voltage drop from the motor control centers to the control devices. First, 10CFR50 Appendix R required many contacts in the control circuits to be isolated from the cortrol room. The additional wiring required to isolate these contacts increased the voltage drop between the power source and the control devices. Secondly, the gauge of the wire in many of the circuits is #14 AWG which also increases the voltage drop. In the initial design of the plant, calculations were not available to the level of detail that is now being completed. This resulted in the selection and installation of equipment in the plant that can not be shown by conservative analytical methods to be capable of performing under DB conditions coincident with minimum supply voltage.

EVENT ANALYSIS

Declaring these twenty eight components inoperable renders a number of safety related systems inoperable. At the tirs of discovery, the plant was shutdown and defueled. The affected systems were not required to be operable in this condition. If the plant had been in Hot Shutdown (Mode 4) or higher, Techn al Specifications would have required that, within one hour, action be initiated to place the plant in a Mode which the specification does not apply.

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If a DB event had occurred coincident with a degraded grid voltage condition, the components may not have operated when required. This condition, however, could be mitigated by supplying the Engineered Safeguard Busses with power from the Emergency Diesel Generators.

CORRECTIVE ACTIONS

The corrective actions for the individual components are not identical. The aggregate actions that will be taken are:

- Control transformers will be replaced with larger control transformers;
- 2. Spare auxiliary relays will be removed from the control circuits;
- Control circuits will be rewired to make use of interposing relays; and
- Control circuits will be rewired to make use of spare conductors in parallel.

Continuation of the Electrical Calculation Enhancement Program will ensure that DB issues of this nature are identified and are promptly corrected.

PREVIOUS SIMILAR EVENTS

There has been one previous Licensee Event Report generated due to inadequate voltage to thety related components (LER 92-007).

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U.S. NUCLEAR REQUILATORY COMMISSION

APPROVED OMB NO. \$150-\$104

LER NUMBER (0)

EXP94ED 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUERT 56.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P.-530). U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON DC 20553. AND TO THE PAPERIVORS REDUCTION PROJECT (3150-6104), OFFICE OF MANAGEMENT AND BUDGET. WASHINGTON DC 20503.

> REVISION NUMBER

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CRYSTAL RIVER UNIT 3 (CR-3)

TEXT CONTINUATION

LICENSEE EVENT REPORT (LER)

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DHV-3	Decay Heat Dropline isolation valve	[BP, 1'.*]
DHV-5	Low pressure injection isolation	[BA, ISV]
DHV-6	Low pressure injection isolation	[BA, ISV]
DHV-35	Decay heat removal pump suction isolation from BWST	[BA, ISV]
FWV-14	Main Feedwater pump suction isolation (closes on S/G isol.)	[SJ,15V]
FWV-15	Main feedwater (Closes on steam generator isolation)	[SJ, ISV]
FWV-28	Main feedwater (Closes on steam generator isolation)	[SJ, ISV]
FWV-29	Main feedwater (Closes on steam generator isolation)	[SJ, ISV]
FWV-30	Main feedwater (Closes on steam generator isolation)	[SJ, 15V]
AHD-3	Damper 3 Recirc damper for control complex supply fans	VI, BDMP
AHF-1A	Ventilation fan (reactor building cooling units)	[BK, FAN
AHF-1B	Ventilation fan (reactor building cooling units)	[BK, FAN
AHF-1C	Ventilation fan (reactor building cooiing units)	[SK, FAN
AHF-15A	Ventilation fan (Decay heat closed cycle cooling pump fans)	[VF, FAN
AHF-158	Ventilation fan (Decay heat closed cycle cooling pump fans)	[VF, FAN
AHF-19A	Ventilation fan (Control complex return)	[VI, FAN
AHF - 198	Ventilation fan (Control complex return)	[VI,FAN
AHF-22A	Ventilation fan (Emergency diesel generator)	[VJ, FAN
AHF-22B	Ventilation fan (Emergency diesel generator)	[VJ, FAN
AHF-22C	Ventilation fan (Emergency diesel generator)	[VJ, FAN
AHF - 22D	Ventilation fan (Emergency diesel generator)	[VJ,FAN
AHF-54A	Ventilation fan (Emergency feedwater cabinet)	[VI, FAN
AHF-54B	Ventilation fan (Emergency feedwater cabinet)	[VI,FAN
CHP-1A	Chill water pump (Control complex supply)	[KM, P
CHP-13	Chill water pump (Control mplex supply)	[KM,P
MUV-58	Borated water supply (His pressure injection)	[BQ,ISV
MUV-73	Borated water supply (High pressure injection)	[BQ,15V
MUV-505	Letdown cooler outlet valve (Containment isolation)	[CB, ISV

Table 1

DOOKET NUMBER (2)