



Florida Power

CORPORATION
Crystal River Unit 3
Docket No. 50-302

May 20, 1996
3F0596-28

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555-0001

Subject: Licensee Event Report (LER) 96-015-00

Dear Sir:

Please find the enclosed Licensee Event Report (LER) 96-015-00. This report is submitted by Florida Power Corporation in accordance with 10 CFR 50.73.

Sincerely,

B. J. Hickle, Director
Nuclear Plant Operations

JAF:ff

Attachment

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

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EXPIRES 5/31/95

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)															DOCKET NUMBER (2)					PAGE (3)											
CRYSTAL RIVER UNIT 3 (CR-3)															0 5 0 0 0 3 0 2					1 OF 0 5											
TITLE (4) Personnel Errors Cause Cable Separation/Isolation Concerns Resulting in Operation Outside the Design Basis																															
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)																					
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MON	H	DAY	YEAR	FACILITY NAMES					DOCKET NUMBER(S)																
0	4	0	8	9	6	9	6	0	1	5	0	0	0	5	2	0	9	6	N/A					0	5	0	0	0			
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)																												
5			20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)																
POWER LEVEL (10)			20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)																
0			0				0				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)																
			20.405(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(viii)(A)																				
			20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(B)																				
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			20.405(a)(1)(v)				50.73(a)(2)(iii)																								
LICENSEE CONTACT FOR THIS LER (12)																															
NAME										TELEPHONE NUMBER																					
J. A. Frijouf, Sr. Nuclear Regulatory Specialist										AREA CODE																					
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13)																															
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS																					
SUPPLEMENTAL REPORT EXPECTED (14)															EXPECTED SUBMISSION DATE (15)					MONTH DAY YEAR											
YES (If yes, complete EXPECTED SUBMISSION DATE)															X NO																

On April 8, 1996, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE 5 (COLD SHUTDOWN). At that time, Engineering personnel observed two cases involving cables that appeared to be routed improperly. They determined that the cable and circuits did not meet CR-3's separation criteria and there was no isolation between Safety-Related (SR) and Non-Safety Related (NSR) portions of the electrical cables to the Toxic Gas Monitors (TGM). FPC personnel concluded that these conditions may constitute a Design Basis concern. The event was reported as a 1 hour non-emergency report at 1237 on April 19, 1996. The cause was determined to be personnel error. Corrective actions include discussions with the Design Engineering Review Board (DERB) to heighten awareness for future design reviews, a dissemination of lessons learned to all design personnel, and modifications necessary to bring the circuits/cables to full qualification.

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CRYSTAL RIVER UNIT 3 (CR-3)

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

EVENT DESCRIPTION

On April 8, 1996, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE 5 (COLD SHUTDOWN), having previously entered the Refuel 10 outage. At that time, FPC was completing a walkdown associated with a Modification Approval Record (MAR) to resolve previously identified separation discrepancies in AC Distribution Panels [EC,PL](ACDP) 51&52. During this effort, field engineering personnel observed two cases involving several cables that appeared to be routed improperly. One case involved cables routed from ACDP-51&52 to the Main Control Board - Station Service Rear (MCB-SSR), the other case involved the power cables from ACDP-51&52 to the Toxic Gas Monitors [IS,MON].

FPC Design Engineering personnel investigated the question raised by field engineering and determined that cable and circuits did not meet CR-3's separation criteria. Additionally, there was no isolation between the Safety-Related (SR) and Non-Safety Related (NSR) portions of the electrical power and control cables to the toxic gas monitors installed in the 1980's. These deficiencies appear to constitute both improper electrical separation and isolation conditions.

Subsequently, on April 19, 1996, FPC personnel conducted a meeting to address system operability, which resulted in the issuance of an Operability Concerns Resolution (OCR) Report. The OCR established conservative parameters and compensatory actions to ensure system operability. These parameters included opening the appropriate breakers to de-energize circuits violating separation and/or isolation criteria, and placing the Control Complex Ventilation System (CREVS) in the recirculation mode, thereby achieving the safety function of the toxic gas monitors.

FPC personnel conservatively concluded that these conditions constitute a Design Basis concern. Therefore, the event was reported as a 1 hour non-emergency report to the Nuclear Regulatory Commission at 1237 on April 19, 1996 via the Emergency Notification System per the requirements of 10 CFR 50.72(b)(1)(ii)(B) and was assigned the Event Number 30323.

Permanent modifications, cable replacement/re-routing and upgrading NSR circuits associated with the toxic gas monitors, were completed on April 29, 1996 in accordance with CR-3's separation/isolation criteria.

This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) for operation that was outside the Design Basis of the plant.

EVENT EVALUATION

During the time the proper circuit separation and isolation did not exist, there have been no challenges nor physical degradation of the affected circuits or any

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

adjacent circuits. However, the design requirements were not met from original construction for circuits to MCB-SSR or from approximately 1981 when the Toxic Gas monitors were first installed until discovery in 1996. Two distinct problems were found.

First, non-safety related cables from ACDP- 51/52 that were routed through 'A' train cable trays were also routed through non-safety related floor penetrations/trays that contained non-safety cables associated with the 'B' train. The 'B' train safety related trays and cables were not affected. The non-safety cables from ACDP-51/52 were fed from 15 amp circuit breakers.

The second problem was that no isolation was provided between the safety and non-safety portions of the circuits for the toxic gas monitors. Isolation should have been provided between the non-safety circuits from ACDP-51/52 and the safety related toxic gas monitors and relay racks. No loss of safety function would have been created by an open condition or loss of power on the non-safety related portion of the circuits, and the CREVS would have automatically entered the recirculation mode. A short circuit could have maintained relays for the toxic gas monitors energized, not allowing the CREVS to go into recirculation on a valid toxic gas detection. This condition would not however have prevented the Engineered Safeguards matrix from placing the system in recirculation on a high reactor building pressure signal.

Conservative compensatory actions were taken as though the toxic gas monitors were inoperable. Additional compensatory actions were taken to de-energize circuits as necessary to eliminate SR circuit separation concerns. Since the plant was in Mode 5, there were no operability requirements for the other systems involved. These measures included placing the CREVS in recirculation mode, thereby achieving the safety function of the toxic gas monitors. CR-3 was in full compliance with all requirements upon completion of modifications to correct the identified discrepancies.

CAUSE

The cause of these discrepancies was personnel error by both field installation personnel and design personnel. In one case, the cable was field routed improperly, creating a separation problem. The work group supervisor failed to recognize the separation requirements which allowed routing inconsistent with the design criteria for electrical circuits.

In the second case, the modification package providing the original cable routing utilized the computerized PC-CKS Cable and Raceway Management Program (CKS) and correctly directed the cables to be routed through NSR trays. However, a field change to the modification package did not use the CKS system and erroneously routed the cables through a separate SR tray causing electrical separation

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inconsistent with design criteria. Additionally, the original modification package that installed the Toxic Gas Monitors in the early 1980's, procured them as safety-related yet provided NSR power without the necessary isolation devices between the safety-class breaks. The monitors were replaced in the late 1980's and the design engineer failed to recognize the inconsistencies missing the opportunity to correct the situation. In both the original and the replacement modification packages, the design engineer was not sufficiently familiar with CR-3's electrical separation and isolation requirements, thereby causing the design errors.

IMMEDIATE CORRECTIVE ACTION

A Problem Report was issued documenting the condition. As described above, a subsequent evaluation determined the condition was a Design Basis concern and therefore reportable.

FPC personnel conducted a meeting to address system operability, which resulted in the issuance of an Operability Concerns Resolution (OCR) Report. Conservative compensatory actions were taken.

ADDITIONAL CORRECTIVE ACTION

The appropriate breakers were opened and The Control Room Emergency Ventilation System (CREVS) was placed in the emergency recirculation mode in accordance with the OCR, assuring appropriate compensatory actions were in effect.

Cables routed to the MCB-SSR were replaced with the appropriate cables to ensure CR-3 Separation/Isolation criteria compliance.

Permanent modifications of the circuits associated with the toxic gas monitors to meet the CR-3 Separation/Isolation criteria have been completed.

ACTION TO PREVENT RECURRENCE

The Manager, Nuclear Engineering Design will discuss these design errors with the Design Engineering Review Board (DERB) to heighten awareness for future design reviews.

A summary of these design deficiencies will be distributed to all design personnel and electrical work group supervisors to review as a "lesson Learned".

The specific personnel involved, to the extent they may be identified, will be counselled and provided the necessary re-training to correct any knowledge deficiencies.

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Since identified isolation discrepancies have been associated with the air handling system, a review of the drawings for this system will be conducted to identify any additional safety to non-safety interfaces without proper isolation. Additional systems may be evaluated based on the results of this review.

These corrective actions will be completed by July 31, 1996.

PREVIOUS SIMILAR EVENTS

There have been four previous reportable events involving electrical isolation problems. There have been two previous reportable events involving electrical separation problems.