



Florida Power

CORPORATION

Crystal River Unit 3

Docket No. 50-302

August 4, 1995
3F0895-06

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

Subject: Licensee Event Report (LER) 95-012-00

Dear Sir:

Please find the enclosed Licensee Event Report (LER) 95-012-00. 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: Regional Administrator, Region II
Project Manager, NRR
Senior Resident Inspector

050038

IF22
11

CRYSTAL RIVER ENERGY COMPLEX: 15760 W Power Line St • Crystal River, Florida 34428-6708 • (904) 795-6486

A Florida Progress Company

9508090294 950804
PDR ADDCK 05000302
S PDR

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 (MN88 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) CRYSTAL RIVER UNIT 3 (CR-3) | | | | | | | | | | DOCKET NUMBER (2) 0 5 0 0 0 3 0 2 | | | | PAGE (3) 1 OF 6 | | |
| TITLE (4) Design Error Leads to Inadequate Circuit Isolation Resulting in Operation Outside the Licensing (Design) Basis of the Plant | | | | | | | | | | | | | | | | |
| 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 | 7 | 0 | 7 | 9 | 5 | 9 | 5 | 0 | 1 | 2 | 0 | 0 | 0 | 3 | 0 | 2 |
| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING): (11) | | | | | | | | | | | | | | |
| 1 | | 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) | | |
| 1 0 0 | | 20.405(a)(1)(ii) | | | | 50.36(c)(2) | | | | 50.73(a)(2)(vii) | | | | OTHER (Specify in Abstract below and in Text, NRC Form 305A) | | |
| | | 20.405(a)(1)(iii) | | | | 50.73(a)(2)(i) | | | | 50.73(a)(2)(viii)(A) | | | | | | |
| | | 20.405(a)(1)(iv) | | | | X 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 J. A. Frijouf, Nuclear Regulatory Specialist | | | | | | | | | | TELEPHONE NUMBER | | | | | | |
| | | | | | | | | | | AREA CODE | | | | | | |
| | | | | | | | | | | 9 0 4 | | 5 6 3 - 4 7 5 4 | | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE IN THIS REPORT (13) | | | | | | | | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 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 July 7, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 870 megawatts. At that time it was determined that CR-3 may have operated outside its licensing basis, relative to compliance with existing 10 CFR 50 Appendix R (Appendix R) Safety Evaluation Report criteria for CR-3, in that a concern was discovered regarding remote shutdown circuits in fire area CC-108-102. A formal operability evaluation was conducted, which concluded that the affected pumps remained operable although CR-3 had deviated from its design intent.

The event was reported as a 1 hour non-emergency report per the requirements of 10 CFR 50.72(b)(1)(ii)(B) and was assigned the Event number 29035. This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) for operation outside the Licensing (Design) basis of the plant.

The cause was a design error by the CR-3 architect/engineering firm. Corrective action included the installation of isolation contacts in the affected control circuits.

EXPIRES 5/31/95

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 (MNB 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)

CRYSTAL RIVER UNIT 3 (CR-3)

DOCKET NUMBER (2)

0 5 0 0 0 3 0 2

LER NUMBER (6)

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

9 5

0 1 2

0 0

PAGE (3)

0 2 OF 0 6

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

EVENT DESCRIPTION:

On July 7, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% reactor power and generating 870 megawatts. At that time it was determined that CR-3 may have operated outside its Licensing (Design) basis relative to compliance with existing 10 CFR 50 Appendix R (Appendix R) Safety Evaluation Report (SER) criteria.

FPC is currently conducting a total Appendix R reanalysis. This reanalysis is an ongoing effort which began in February, 1995 and is scheduled for completion on August 31, 1995. During this activity, a concern was discovered regarding remote shutdown circuits in fire area CC-108-102. This fire area comprises an area including an entrance hallway to the 108 foot elevation of the control complex and including the Remote Shutdown Room (RSR). Circuits SWM44 and SWM47 for Nuclear Services Closed Cycle Cooling [CC](SW) Water Pump 1A and 1B respectively were of concern. Both of these circuits terminate at the Remote Shutdown Panel [JL](RSP), and thus, should fail safe for a fire in fire area CC-108-102. This event comprises certain fire induced short circuits (hot shorts) or grounds on some of the conductors in each cable which could fail the respective SW water pump. A fire in the RSR area could theoretically fail both SWP-1A and SWP-1B rendering the SW system unavailable.

A formal operability evaluation was conducted in accordance with NOD-14, "Evaluating Operability and Determining Safety Function Status", which concluded that the affected pumps remained operable although CR-3 had deviated from its design intent. The evaluation concluded that maintaining SWP-1B as the normal running pump with SWP-1A and SWP-1C in standby would provide the most reliable interim configuration until permanent circuit modifications could be completed.

The event was reported to the Nuclear Regulatory Commission at 1742 on July 7, 1995 via the Emergency Notification System as a 1 hour non-emergency report per the requirements of 10 CFR 50.72(b)(1)(ii)(B) and was assigned the Event number 29035. This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B) for operation outside the Licensing (Design) basis of the plant.

EVENT EVALUATION

The SW system removes heat from various components and transfers this heat to the Decay Heat and Nuclear Services Closed Cycle Cooling Raw Water [BS](RW) system. The SW system is not required to mitigate any design basis accidents described in Chapter 14, Safety Analysis, of the Final Safety Analysis Report (FSAR), but does provide cooling for components in systems necessary to mitigate these accidents.

The CR-3 SER for Appendix R states that CR-3 had proposed methods for protecting the safe shutdown capability of circuits whose fire induced failures may adversely

EXPIRES 5/31/95

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

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

affect the plant's safe shutdown capability. These methods include electrical isolation of the control room from the RSP. Circuits SWM44 for SWP-1A and SWM47 SWP-1B were not provided with the appropriate isolation.

An engineering evaluation of this deficiency was conducted. This evaluation considered the effects of fire induced failures and possible spurious operation due to hot shorts on the SWPs. During this evaluation, a matrix was developed which considered the three combinations of SWP configuration vs each postulated accident scenario. Figure 1 provides a simplified operability matrix which illustrates the SWP configurations and operability of each SWP. The evaluation concluded that Pump Configuration 2 (see Figure 1) maintaining SWP-1B as the normal running pump with SWP-1A and SWP-1C in standby would enable both SWP-1B and SWP-1C to remain operable. This combination provided the most reliable interim configuration until permanent circuit modifications could be completed.

FPC has maintained a roving fire watch since 1992. The fire watch personnel are required to traverse the subject fire area on an hourly basis. Additionally, the area is equipped with automatic fire detection equipment which alarms in the control room, fire extinguishers and a local hose reel.

Probabilistic Safety Assessment (PSA) has determined that an ignition frequency of $2.39\text{E-}4$ per year can be expected for fire area CC-108-102. Based on the probability of occurrence, the early fire detection via the roving fire watch personnel, and the readily available fire suppression equipment, this event did not substantially degrade the safety of CR-3, nor did it compromise the health and safety of the general public.

CAUSE

The cause of this event was a design error during the original RSP design by the architect/engineering firm for CR-3. It is considered to be an isolated event since no other problems have been discovered during the current Appendix R reanalysis.

IMMEDIATE CORRECTIVE ACTION

A formal operability evaluation was conducted in accordance with NOD-14, titled "Evaluating Operability and Determining Safety Function Status". This activity was completed on July 7, 1995.

SWP-1B was placed in service as the normal duty SW pump until this concern was resolved. If SWP-1A was placed in service a continuous fire watch will be established in the Remote Shutdown Room (RSR) within 1 hour.

EXPIRES 5/31/95

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 (MNB8 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) | 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 5 | 0 1 2 | 0 0 | 0 4 OF 0 6 |

TEXT (If more space is required, Use additional NRC Form 385A's (17))

ACTION TO PREVENT RECURRENCE

A modification Approval Record (MAR) was initiated to install isolation contacts in the control circuits for SWP-1A and SWP-1B to provide the required isolation. This MAR was issued on July 8, 1995 and was installed and tested on July 9, 1995.

PREVIOUS SIMILAR EVENTS

There have been two previous events involving Appendix R cable separation issues. LER 88-12 addressed the RSP and LER 88-39-01 reported valve control circuit deficiencies.

ATTACHMENT

- Attachment 1 -Abbreviations and Acronyms
Figure 1 -Simplified Operability Matrix

EXPIRES 5/31/96

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 (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) CRYSTAL RIVER UNIT 3 (CR-3) | DOCKET NUMBER (2) | | LER NUMBER (8) | | | PAGE (3) |
| | | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | |
| | 0 5 0 0 0 3 0 2 | | 9 5 | 0 1 2 | 0 0 | 0 5 OF 0 6 |

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

ATTACHMENT 1 - ABBREVIATIONS AND ACRONYMS

Appendix R Appendix R to 10 CFR 50 - Fire Protection Program for Nuclear Power
Facilities Operating Prior to January 1, 1979

CC-108-102 Fire area - hallway on 108 foot elevation and remote shutdown room

CR-3 Crystal River Unit 3

FPC Florida Power Corporation

FSAR Final Safety Analysis Report

MODE ONE Power Operation

NOD-14 Evaluating Operability and Determining Safety Function Status
(procedure)

PSA Probabilistic Safety Assessment

RSP Remote Shutdown Panel

RSR Remote Shutdown Room

RW Nuclear Services Closed Cycle Cooling Raw Water

SER Safety Evaluation Report

SW Nuclear Services Closed Cycle Cooling System

SWM44 Remote shutdown control circuit SWP-1A

SWM47 Remote shutdown control circuit SWP-1B

SWP Nuclear Services Closed Cycle Cooling System Pump

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATIONESTIMATED 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)

CRYSTAL RIVER UNIT 3 (CR-3)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

0 5 0 0 0 3 0 2 9 5 --- 0 1 2 --- 0 0 0 6 OF 0 6

TEXT (If more space is required, Use additional NRC Form 368A's (17))

FIGURE 1 - SIMPLIFIED OPERABILITY MATRIX

| PUMP CONFIG. | | OPER | SWP-1A | SWP-1B | SWP-1C |
|--------------|----------------|------|------------|------------|----------|
| 1 | SWP-1A RUNNING | NO | HOT SHORT | HOT SHORT | PUMP |
| | SWP-1B STANDBY | NO | OR OPEN = | RENDERS | REMAINS |
| | SWP-1C STANDBY | YES | INOPERABLE | INOPERABLE | OPERABLE |
| 2 | SWP-1A STANDBY | NO | HOT SHORT | PUMP | PUMP |
| | SWP-1B RUNNING | YES | OR OPEN = | REMAINS | REMAINS |
| | SWP-1C STANDBY | YES | INOPERABLE | OPERABLE | OPERABLE |
| 3 | SWP-1A STANDBY | NO | HOT SHORT | HOT SHORT | PUMP |
| | SWP-1B STANDBY | NO | OR OPEN = | RENDERS | REMAINS |
| | SWP-1C RUNNING | YES | INOPERABLE | INOPERABLE | OPERABLE |