



Florida Power

CORPORATION

Crystal River Unit 3

Docket No. 50-302

November 28, 1995
3F1195-16

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

Subject: Licensee Event Report (LER) 95-024-00

Dear Sir:

Please find the enclosed Licensee Event Report (LER) 95-024-00. This report is submitted by Florida Power Corporation in accordance with 10 CFR 50.73.

Sincerely,

Ron Davis FOR B.J. HICKLE

B. J. Hickle, Director
Nuclear Plant Operations

JAF:ff

Attachment

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

050033

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

A Florida Progress Company

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PDR ADOCK 05000302
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EXPIRES 5/31/96

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.

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|--|--------|--|----------------|---------------------|-----------------|-----------------|-----------|--------------|-------------------------------|--|---|-------|-------------------------------|--------------------|---|---|-----|---|---|---|---|---|
| FACILITY NAME (1) CRYSTAL RIVER UNIT 3 (CR-3) | | | | | | | | | | DOCKET NUMBER (2) 0 5 0 0 0 3 0 2 | | | | PAGE (3) 1 OF 7 | | | | | | | | |
| TITLE (4) Annubar Flow Tap Orientation Causes Seismic Qualification Concerns Resulting in Operation Outside The 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 | | | | | | | | | |
| 1 | 0 | 3 | 0 | 9 | 5 | 0 | 2 | 4 | 0 | 0 | 1 | 1 | 2 | 8 | 9 | 5 | 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) | | | | | | | | | | | | | | | | | | | | |
| POWER LEVEL (10) | | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | | | | | | | | | | | | | | | | | | | | |
| 1 | | 20.402(b) 20.405(c) 50.73(a)(2)(iv) 73.71(b) | | | | | | | | | | | | | | | | | | | | |
| 1 0 0 | | 20.405(a)(1)(i) 50.36(c)(1) 50.73(a)(2)(v) 73.71(c) | | | | | | | | | | | | | | | | | | | | |
| | | 20.405(a)(1)(ii) 50.36(c)(2) 50.73(a)(2)(vii) OTHER | | | | | | | | | | | | | | | | | | | | |
| | | 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, Sr. Nuclear Regulatory Specialist | | | | | | | | | | TELEPHONE NUMBER AREA CODE 9 0 4 5 6 3 - 6 4 8 6 | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | |
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| SUPPLEMENTAL REPORT EXPECTED (14) | | | | | | | | | | EXPECTED SUBMISSION DATE (15) | | MONTH | DAY | YEAR | | | | | | | | |
| YES (If yes, complete EXPECTED SUBMISSION DATE) | | | | | | | | | | X NO | | | | | | | | | | | | |

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

On October 30, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% RATED THERMAL POWER and generating 879 megawatts. FPC engineering personnel determined that an annubar flow element tap (AFT) was not installed per the design drawings, since it was installed on a spool piece at 48 degrees from vertical rather than 30 degrees. This condition resulted in calculated seismic stresses which exceeded allowables when the annubar was installed and with the probe in the retracted position. The annubar was not installed at the time of discovery. FPC determined that this condition resulted in operation outside the design basis during times when the annubar was installed and the probe retracted. It was determined that the risk to the plant was negligible and, due to the very low seismicity of the CR-3 site, continued operation is considered acceptable for the few surveillance tests to be done before corrective actions are completed. The cause of this condition was personnel error for failure to seismically qualify the AFT with the annubar installed and the probe in the retracted position. A secondary cause was the incorrect installation of spool piece RW-44. Corrective actions include procedure revisions and replacement of the spool piece.

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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.

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

EVENT DESCRIPTION

On October 30, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 100% RATED THERMAL POWER (RTP) and generating 879 megawatts. At 1530, FPC engineering personnel determined that the plant previously had been outside its design basis because calculated seismic stresses for an annubar flow element were higher than Code allowables, for certain installed configurations. In addition, it was discovered that the annubar flow element tap (AFT) was not installed per the design drawings. At the time of discovery, the annubar was not installed, therefore the plant was at no risk and was within its design basis.

A concern identified during the Service Water System Operational Performance Inspection (SWSOPI) revealed that certain seismic qualification documentation was not available. A subsequent Request for Engineering Assistance (REA 95-0310) identified three locations in the Seawater Room in which AFTs were installed in accordance with an approved Modification Approval Record (MAR) and required seismic analysis. A review of MAR 87-07-21-01 determined that the original field work was performed by contract personnel. Each of the three AFTs consists of a short 2 inch diameter branch connection to the three respective 24 inch diameter Nuclear Services and Decay Heat Service Water [BS](RW) headers. The AFT terminates in a ball valve and flange (see Figure 1, RW Annubar Installation). These AFTs are used for mounting an annubar assembly for flow measurement in the RW headers.

The RW headers and AFTs are classified as ANSI/ASME B31.1 ES, Seismic Class I, changing to Seismic Class III at the outboard end of the valve. The AFTs themselves were qualified by GAI Report #1788 Case #1, as stated in the MAR Design Input Record. The seismic qualification of the AFTs with the annubar installed and the probe both retracted and inserted, was either not performed, or is not retrievable. REA 95-0310 was written to request Seismic Class I analysis of the AFTs with the annubar installed.

Preliminary calculations, conducted under the recent REA, indicated that the AFTs without the annubar installed, as designed, met all Seismic Class I requirements. However, during a field walkdown it was observed by an engineer that the AFT at RW Valve 147 (RWV-147), which is located near the inlet of the Decay Heat Raw Water Heat Exchanger [DC,HX](DCHE-1B), was not installed at the orientation shown on the design drawing. The design drawing specifies that the AFT be installed 30 degrees off the vertical, but the field installation was measured to be approximately 48 degrees off the vertical. This 18 degree difference amounts to a one bolt hole misalignment in the 20 bolt hole flanged spool piece RW-44 in which the AFT is installed. The remaining two AFTs located at RW Valve 146 (RWV-146) and RW valve 148 (RWV-148) were installed in accordance with the design orientation and were determined to be fully qualified for seismic loadings with the annubar probe inserted or retracted.

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Preliminary calculations for the AFT at RWV-147 as incorrectly installed, exceed allowables by about 18% for the case where the annubar assembly is installed on the AFT but the annubar probe is not inserted into the flow stream (see Figure 1, RW Annubar Installation). When the annubar is inserted into the flow stream the installation meets all Seismic Class I requirements. Deadweight stresses are within allowables with the annubar probe inserted into the flow stream or when retracted. The only non-qualified case for the as-built orientation of the AFT is a Safe Shutdown Earthquake (SSE) loading with the annubar assembly installed on the AFT and the annubar probe retracted.

This event is considered to be an isolated occurrence. Only three AFTs were installed by the MAR, and only one was deficient. Discovery of the installation error would have been most likely to occur during the actual MAR installation. Since the contractor performing the original installation is no longer active at CR-3, any corrective action relative to the individuals responsible for the actual installation is impossible. The FPC personnel responsible for system walkdown and acceptance following installation would not have been expected to detect the slight 18 degree difference in AFT orientation on a spool piece in the overhead line while performing their walkdown.

It was determined that in the past, the plant had operated outside the design basis only when the annubar probe was installed on the AFT and maintained in the retracted position. This would occur on a quarterly basis for a few days at a time in anticipation of pump surveillance testing. This report is submitted in accordance with 10CFR50.73(a)(2)(ii)(B) for operation that was outside the design basis.

EVENT EVALUATION

The CR-3 site is a geographical area that is considered seismically inactive. The Final Safety Analysis Report (FSAR) states that: "In a 300 year history, only eight earthquakes of Intensity IV (Modified Mercalli) or greater have had their epicenters located within the State (Ed. Florida). No earthquake is known to have occurred within 50 miles of the plant site". Probabilistic Safety Assessment calculations do not currently address earthquakes since they are considered such a low level risk.

Based on the extremely low probability of a seismic event at CR-3, combined with very limited time the annubar had been in a position which is seismically unacceptable, FPC has determined the risk to the plant to be negligible. Therefore, past surveillance performances did not compromise the health and safety of the general public. Future operations are likewise considered acceptable for the few times that surveillance testing must be performed prior to the permanent corrective action of spool piece RW-44 replacement.

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CAUSE

The cause of this event was personnel error in that the qualification of flow taps for Seismic Class I requirements was not accomplished for all design and operating conditions. The MAR identified that the effects of the weight of the annubar assembly on the seismic adequacy of the flow taps was required to be evaluated, but apparently the evaluation was not performed. Secondly, spool piece RW-44 was installed with the AFT at RWV-147 oriented incorrectly. Proper orientation was shown on a Field Change Notice (FCN) to the MAR.

IMMEDIATE CORRECTIVE ACTION

The AFT associated with RWV-147 was placed under the administrative control of the Shift Supervisor On Duty (SSOD) to control installation of the annubar assembly.

ADDITIONAL CORRECTIVE ACTION

1. Procedure SP-340D, RWP-3B, DCP-1B, and Valve Surveillance, will be revised to prevent the annubar probe from being left in the retracted position at RWV-147 for any longer than installation or removal of the annubar assembly from the mounting flange requires. This task will be completed by December 20, 1995.
2. The schedule will be coordinated so that the Work Request for installation and removal of the annubar assembly at RWV-147 occurs at the time SP-340D is to be performed, so that the annubar probe is in the retracted position for a minimal duration. This task will be completed by December 20, 1995.

ACTION TO PREVENT RECURRENCE

1. Spool piece RW-44 will be replaced with spool piece RW-85 so that the AFT at RWV-147 is oriented properly. This activity is currently scheduled for installation during the Refuel 10 outage. This project will be completed under MAR 93-07-05-01 by June 30, 1996.
2. Since the occurrence approximately eight years ago, Nuclear Engineering Procedures have been created or revised to place emphasis and control on

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documentation required to support the MAR and Seismic Qualifications. Some of these actions include:

- A. Issuance of NEP 233, Review of Vendor Supplied Components Requiring Qualification, which establishes a methodology for seismically qualifying equipment;
- B. A requirement was introduced which requires that modifications are not returned to service until all supporting calculations have been developed, revised, or dispositioned by Nuclear Engineering Personnel; and
- C. An "Open Items" program was introduced to identify and track activities which are required to support modification installation, return to service and closure. Thus assuring incomplete activities (e. g. Calculations) are completed or addressed prior to return to service.

PREVIOUS SIMILAR EVENTS

There have been four previous reportable events involving seismic qualification. LER 85-004-04 reported HVAC concrete anchor support deficiencies; LER 88-013-01 addressed deficiencies in subcontractor design documents involving HVAC control air tubing; LER 89-016-05 included seismic mounting problems involving junction boxes; and LER 89-036-00 reported the procurement of non seismically-qualified transmitters.

ATTACHMENTS

Attachment 1 - Abbreviations, Definitions And Acronyms
Figure 1 - RW Annubar Installation

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ATTACHMENT 1 - ABBREVIATIONS, DEFINITIONS AND ACRONYMS

AFT Annubar Flow Tap

ANSI/ASME B31.1 Power Piping (U S Code for Pressure Piping)

CR-3 Crystal River Unit 3

FCN Field Change Notice

FPC Florida Power Corporation

FSAR Final Safety Analysis Report

MAR Modification Approval Record

MODE ONE POWER OPERATION

NEP 233 Review of Vendor Supplied Components Requiring Qualification (Procedure)

REA Request for Engineering Assistance

RTP RATED THERMAL POWER

RW Nuclear Services and Decay Heat Service Water

RWV Nuclear Services and Decay Heat Service Water Valve

SP-340D RWP-3B, DCP-1B, and Valve Surveillance (procedure)

SSE Safe Shutdown Earthquake

SSOD Shift Supervisor On Duty

SWSOPI Service Water System Operational Performance Inspection

NOTES: ITS defined terms appear capitalized in LER text (e.g. MODE ONE)
Defined terms/acronyms/abbreviations appear in parenthesis when first used (e.g. Reactor Building (RB)).
EIIIS codes appear in square brackets (e.g. Makeup Tank [CB,TK])

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Figure 1 - RW Annubar Installation

