

**Florida
Power**
CORPORATION
Crystal River Unit 3
Docket No. 90-302

August 12, 1997
3F0897-11

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

Subject: Additional Information Regarding Implementation of License Amendment
No. 156

- References:
- A. FPC to NRC letter, 3F0597-21, Technical Specification Change Request Notice (TSCRN) No. 212, Revision 1, "Containment Leakage Rate Program, 10 CFR 50, Appendix J, Option B," dated May 1, 1997
 - B. FPC to NRC letter, 3F0797-14-00, Licensee Event Report (LER) 50-302/97-014, dated July 11, 1997
 - C. NRC to FPC letter, 3N0797-40, License Amendment No. 156, dated July 24, 1997

Ladies and Gentlemen:

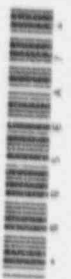
The purpose of this letter is to provide the NRC with additional information regarding License Amendment No. 156 which authorizes Crystal River Unit 3 to implement 10 CFR Part 50, Appendix J, Option B related to containment leakage tests. Implementation of Appendix J, Option B requires that Crystal River Unit 3 (CR-3) verify and maintain records that two previous Integrated Leak Rate Tests (ILRTs) performed at CR-3 were successful, and the criteria for Types A, B, and C tests have been met.

During a review of containment penetrations conducted to update the Containment Leakage Rate Testing Program, Florida Power Corporation (FPC) identified a concern related to previous Appendix J Type A (ILRT) testing which involved penetrations 319, 426, 429 and 442 for the Reactor Building pressure sensing lines.

10 CFR 50, Appendix J requires that all non-essential systems be drained of water or other fluids and vented to the extent necessary to ensure exposure of the system containment isolation valves to ILRT containment air test pressures during the performance of an ILRT. This method ensures the penetrations are subjected to a differential pressure equal to the worst case post accident differential pressure. Investigation of penetrations 319, 426, 429 and 442 revealed that the

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penetrations were not properly vented during previous containment ILRTs. Thus, the requirements of 10 CFR 50, Appendix J may not have been met. This was reported in LER 50-302/97-014-00 (Reference B).

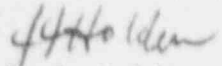
The following corrective actions have been implemented to assure compliance with Appendix J and to assure that the containment ILRTs performed in 1987 and 1991 remain valid:

1. A search of maintenance activities for any work performed on components in lines through penetrations 319, 426, 429 and 442 was performed. This search determined that maintenance activities had not occurred which could effect the validity of performing a Local Leak Rate Test (LLRT) on these penetrations, and then applying those results as penalties to previous ILRTs.
2. A local leak rate procedure was performed for these penetrations and actual leakage from each valve combination was determined. The acceptance criteria in the procedure was derived from a review of the previous ILRT's from 1987 and 1991. An allowable leakage was selected for these penetrations which assures that the previous ILRT results remain acceptable. The test was performed with full accident differential pressures across the components. The results remain within the acceptance criteria required by Appendix J, as shown in Attachment A.

Based on the results of LLRTs performed on penetrations 319, 426, 429 and 442 and the satisfactory results of the 1987 and 1991 integrated leakage rate tests with the penalties applied (Attachment A), FPC concludes that Crystal River Unit 3 has met the regulatory requirements set forth in 10 CFR 50, Appendix J, Option A. This conclusion supports the implementation of 10 CFR 50, Appendix J, Option B (Reference C) at CR-3.

Should you have any questions or require additional information, please contact David Kunsemiller, Manager, Nuclear Licensing at (352) 563-4566.

Sincerely,


J. J. Holden
Director
Nuclear Engineering and Projects

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

Attachment A: Results of Local Leak Rate Tests performed on Containment Penetrations 319, 426, 429 and 442 with penalties to 1987 and 1991 ILRTs applied

Attachment B: Sketch of the Configuration of Penetration 319

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ATTACHMENT A

Results of Local Leak Rate Tests performed on
Containment Penetrations 319, 426, 429 and 442 with
penalties to 1987 and 1991 ILRTs applied

Supplement to 1987 and 1991 Integrated Leak Rate Test Reports

References:

- 1) 1987 Report (FPC to NRC letter, 3F0388-16, dated March 21, 1988)
- 2) 1991 Report (FPC to NRC letter, 3F0192-16, dated January 29, 1992)
- 3) Work Instruction WI179, "Leakage Test For RB Pressure Switch Cabinet Check Valves"

Isolation Check Valves associated with these penetrations:

PEN-319: BSV-140
PEN-442: BSV-135, BSV-122, BSV-124, BSV-126, and BSV-128
PEN-429: BSV-134, BSV-114, BSV-116, BSV-118, and BSV-120
PEN-426: BSV-133, BSV-106, BSV-108, BSV-110, and BSV-112

Discussion:

During performance of previous Integrated Leak Rate Test (ILRT's), CR-3 failed to properly vent penetrations 319, 442, 429, and 426. The leakage contribution of these penetrations must be added as penalty to the previous ILRT results to assure satisfactory test results are still achieved, considering this additional leakage.

Leak rate testing was performed on Penetrations 319, 442, 429, and 426 between July 31, 1997 and August 2, 1997. The purpose of the testing was to assess the leakage rates associated with these penetrations so that the impact on previous ILRT's could be evaluated.

During performance of the Leak Rate Tests the test configuration was representative of the configuration which should have existed during the previous ILRT's. As an example, Attachment B provides a sketch of the configuration of penetration 319. All components in each penetration were pressurized to a differential test pressure of 54.2 psig. This test pressure represents Crystal River Unit 3's current peak post accident pressure.

The test evolution included multiple test series to help distinguish source of leakage. Initially, the penetration was pressurized with its associated solenoid valves closed to identify total pipe/component leakage. This leakage included contribution from all components associated with the penetration (ie, check valve/solenoid valve combination, pipe fitting leaks upstream of the check valve, pressure switch leaks, etc.). This is the leakage which would have been

identified during the previous ILRT's had the lines been properly vented, and would have been included in the test results at that time.

After understanding the initial penetration leakage rate, the solenoid valve(s) in the penetration were opened one at a time to assess individual check valve contribution to total leakage. The new leak rates were measured, and then compared to the initial measured leak rate. The differential represents the additional leakage attributable to the isolation check valve which would have been measured in the previous ILRT's, had these penetrations been properly vented.

The following pages show the conversion of the volumetric flow rates measured as additional leakage to pounds mass. This additional leakage was then added to the results of the 1987 and 1991 ILRT. The most conservative methodology was utilized (Total Time method versus Mass Point method). The new results indicate that the total containment leakage measured was within the allowable, and the results of the 1987 and 1991 ILRT's remain valid.

Note that when the LLRT test results were added to the test results of the 1987 and 1991 ILRT reports, two methods were used. The first method was to add the results of the combined totals (piping, check valve, fittings, etc.) of each penetration to each of the respective reports. This method assumes that these pathways were leak tight during the 1987 and 1991 ILRTs. Thus the corrected report in this case is very conservative.

The second method was to add the sum total of the leakage through each of the check valves only to the 1987 and 1991 reports. This method is technically sound but results in a smaller overall leakage total.

In either method, the results are acceptable.

1987 ILRT (TOTAL TIME METHOD)

Data from 1987 ILRT Test Report: Test Pressure 49.6 PSIG

Calculated Leakage	=	0.097% weight per day
Initial Mass	=	634,307 lbs
End of test Mass	=	633,845.25 lbs
Maintenance Improvement Penalty	=	15,751 sccm (0.010 % per day)
Type "C" Penalty	=	17,655 sccm (0.011 % per day)
1987 ILRT Test Report Data	=	0.1160 % w/day 95% UCL
Maintenance Improvement Penalty	=	0.0100 % weight per day
Type "C" penalty	=	0.0019 % weight per day
Total ILRT Results	=	0.1370 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day

1997 ADJUSTED RESULTS FROM WI-179 LLRT'S

1997 Pressure Switch Cabinet Test Pressure	≥	54.2 psig
Penetration 319, 442, 429, 426		Test Data
LLRT combined leakage (solenoids closed)	=	16,775 sccm
Individual Check Valve Leakage	=	1,509 sccm
Total Penetration Pathway Leakage	=	18,284 sccm = .0100 %

Applied Results

1987 ILRT Previous Total	=	0.1370 % weight per day
WI-179 Total Path Leakage	=	0.0100 % weight per day
1997 Adjusted Total	=	0.1470 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day
1987 ILRT Total	=	0.1370 % weight per day
WI-179 net total (check valves)	=	0.0010 % weight per day
1997 Adjusted Total	=	0.1380 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day

Performed By: Kenneth R. Harrington Date: 8-7-97

Reviewed By: Henry White Harvey H. Liles Date: 8/12/97

1991 ILRT (MASS POINT METHOD)

Data from 1991 ILRT Test Report: Test Pressure 54.3 PSIG

Calculated Leakage	=	0.0962% weight per day
Initial Mass	=	688,127 lbs mass
End of test Mass	=	687,461 lbs mass
Maintenance Improvement Penalty	=	700.7 sccm (0.0004% per day)
Type "C" Penalty	=	3,475.6 sccm (0.0019% per day)
Volume Change of Containment	=	0.0005 % per day

1991 ILRT Test Report Data	=	0.0986 % w/day 95% UCL
Maintenance Improvement Penalty	=	0.0004 % weight per day
Type "C" Penalty	=	0.0019 % weight per day
Volume Change of Containment	=	0.0005 % weight per day
Total ILRT Results	=	0.1014 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day

1997 ADJUSTED RESULTS FROM WI-179 LLRT'S

1997 Pressure Switch Cabinet Test Pressure	≥	54.2 psig
Penetration 319, 442, 429, 426		Test Data
LLRT combined leakage (solenoids closed)	=	16,775 sccm
Individual Check Valve Leakage	=	1,509 sccm
Total Penetration Pathway Leakage	=	18,284 sccm = .0100 %

Applied Results

1991 ILRT Previous Total	=	0.1014 % weight per day
WI-179 Total Path Leakage	=	0.0101 % weight per day
1997 Total	=	0.1105 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day
1991 ILRT Total	=	0.1014 % weight per day
WI-179 net total (check valves)	=	0.0010 % weight per day
1997 Adjusted Total	=	0.1024 % weight per day
ILRT Acceptance Criteria	=	0.1875 % weight per day

Performed By: Kenneth R. Harrington Date: 8-7-97

Reviewed By: Harvey H. Liles Date: 8/12/97

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ATTACHMENT B

Sketch of the Configuration of Penetration 319

