Florida
Power
CORPORATION
Crystal River Unit 3
Docket No. 50-302

March 9, 199
3F0395-05

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

Subject: OTSG Inspection, Confirmatory Action Letter

References: A FPC to NRC letter, 3F1194-10, dated November 30, 1994
B. NRC to FPC letter, 3N0494-21, dated April 26, 1994

Dear Sir:

Florida Power Corporation (FPC) provided in Reference A, a report containing the results of the Once Through Steam Generator (OTSG) tube pull performed during the Spring 1994 Refueling outage (9R). The report was required to satisfy Item No. 8 of Reference B [a Confirmatory Action Letter (CAL) associated with our OTSG tube inspection program]. In subsequent conversations with the NRC staff a concern regarding the use of the word "preliminary" in the report was expressed to FPC. This led to further discussion regarding whether the report fully addressed Item No. 8 of the CAL. FPC considers the information contained in the report to have satisfied the request. This letter and attachment are submitted to clarify this situation.

The cover letter for Reference A as well as attached report utilized the word "preliminary" in several places. This choice of words used was intended to indicate the existence of other projects or work that were, indeed, not yet completed. These additional tasks are integral to overall tube integrity projects; but, are not necessary to satisfy CAL Item No. 8.

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The attachment to this letter provides a cross-reference between the CAL Item 8 and the corresponding section(s) of the report where each sub-item was addressed as well as a brief summary.

Sincerely,

P. M. Beard Jr.
Senior Vice President
Nuclear Operations

PMB:LVC
Attachment

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

CROSS-REFERENCE

CONFIRMATORY ACTION LETTER ITEM No. 8

Pull four tube samples with indications at the 7th and 9th tube support plates and distorted tube sheet signals at the lower tube support face. Perform destructive and non-destructive examinations of these tubes to evaluate the flaw morphology, causal factors, structural and leakage integrity implications, and field detection capabilities. Submit the results of the Refuel 9 OTSG inspections and examinations no later than November 30, 1994.

CRYSTAL RIVER UNIT 3 (CR-3) NOVEMBER 30 TUBE PULL REPORT

Section 1.3 of the report discussed the scope of the tube pull, identified the four tubes that were pulled and provided the basis for their selection.

Section 2.1 and 2.2 described the non-destructive (NDE) examinations performed. The sections discussed the field and laboratory examination matrixes performed in great detail. Generally, the techniques utilized in the field were bobbin coil, motorized rotating pancake coil (MRPC), rotating field eddy current and ultrasound (UT). For the laboratory portion of the non-destructive phase the same techniques were used with more extensive usage of UT than in the field. Table 2-1 provided a summary of the non-destructive examinations that were performed in each of the pulled tubes.

Section 2.4 discussed the destructive examinations. Destructive examinations which were performed were summarized in Table 2-1. This phase of the pulled tube examinations included the evaluation of the tube degradation by performing sectioning, burst testing, metallography, fractography and base metal leak testing characterization. The results of the destructive and non-destructive examinations were summarized in Tables 2-2, 2-3 and 2-4.

The two damage mechanisms observed, wear and pit-like intergranular attack (IGA), were discussed throughout the report. CAL No. 8 used the term flaw morphology. FPC discussed degradation mechanisms in Section 3.1. The two degradation mechanisms discussed have well known morphologies and therefore, the discussion provided the Staff with appropriate information on the results of the pulled tubes. Section 2.4.1.2 correlated the pit-like IGA found in the lower tubesheet crevice regions on tube numbers 68-46 and 72-49 to the IGA found in an archived tube 41-44 (from 1992 tube pull) that was tested as part of this project and to those pit-like indications known from the 1992 tube pull project. Appendix B of the report provided industry experience on wear which included a discussion on different morphologies of wear scars observed which presented some similitude to wear scars observed at CR-3.

Sections 3.1.1 and 3.1.2 discussed causal factors for the CR-3 pit-like IGA and wear respectively. The results of the 9R tube pull are consistent with, and continue to support the postulated cause for the pit-like IGA reported after the 1992 tube pull (i.e., reduced sulfur species caused from a sulfur intrusion from condensate polishers that is no longer active). For the wear marks, it was concluded that they were the result from the tube rubbing against the tube support plate land or against oxides or other debris wedged between the tube and TSP land (Section 3.1.2). A conclusion statement was also provided in Section 4.

Cross-Reference (Continued)

Section 2.4.1.1 discussed burst testing and Section 3.2 discussed structural integrity implications. Section 4 of the report concluded that the two degradation mechanisms observed pose no threat to the structural integrity of the tubing.

Section 3.3 discussed leakage integrity implications.

Sections 2.1, 2.2, and 2.3 discussed field detection capabilities. That area was also discussed in Section 3.2.1. Section 3.4 provided a qualitative statement that the probability of detection was consistent with that which had been provided for the 1992 tube pull project. This section addressed additional projects that were planned as part of the BWOG steam generator tube integrity projects. However, as mentioned in the cover letter the results of those projects are not considered to be necessary to satisfy CAL Item No. 8.

FPC does consider Reference A to have met the requirement of CAL Item No. 8 for a submittal containing the results of the Refuel 9 OTSG inspections and examinations by November 30, 1994.