

**Florida  
Power**  
CORPORATION

June 15, 1990  
3F0690-02

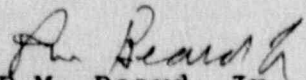
U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DPR-72  
Steam Generator Tube Plugging

Dear Sir:

Florida Power Corporation is submitting the results of the Refuel 7 Once Through Steam Generator (OTSG) eddy current examination in accordance with Technical Specification Section 4.4.5.5. The eddy current inspections of the OTSG "A" and "B" were completed on May 29, 1990. A review of the inspection data resulted in eight (8) defective tubes and two (2) administratively plugged tubes in the "A" OTSG, and sixteen (16) defective tubes, one (1) obstructed tube and seven (7) administratively plugged tubes in the "B" OTSG. Attachment 1 describes the criteria used for sample selection and Attachment 2, provides the location and percent degradation of the tubes plugged during the inspections.

Sincerely,

  
F.M. Beard, Jr.  
Senior Vice President  
Nuclear Operations

PMB:wla

Attachment

xc: Regional Administrator, Region II  
Senior Resident Inspector

9006250041 900615  
PDR ADOCK 05000302  
PDC

*Aool*  
*11*

## ATTACHMENT 1

Florida Power Corporation (FPC) performed eddy current examinations of the Once Through Steam Generators (OTSG's) during Refuel 7. The examinations included the following:

	<u>OTSG "A"</u>		<u>OTSG "B"</u>	
	<u>%</u>	<u>No. of Tubes</u>	<u>%</u>	<u>No. of Tubes</u>
Random sample size	22	3417	22	3417
Special Areas (lane & peripheral)	<u>2.4</u>	<u>372</u>	<u>4.8</u>	<u>745</u>
Total % & No. of Tubes inspected	24.4%	3789	26.8%	4162

Sample selection for an eddy current examination must be done in accordance with Table 4.4-2 (enclosure 1) of the Technical Specifications. This Table describes the initial random sample size (3%) and classifies the inspection results into three categories, C-1 through C-3, which define the size of subsequent random samples. Entry into the C-2 category results in a progressive reinspection scheme up to a maximum of 21% of the tubes in the affected steam generator. Entry into the C-3 category requires a 100% inspection of the affected steam generator.

Reinspection of additional steam generator tubes on a progressive basis is costly in both personnel exposure and outage time because of the reindexing of the robotics in the steam generators and the rescheduling of other outage activities. Therefore, the Refuel 7 inspection scheme was developed to incorporate in advance the cascading effect for reinspection in the C-2 category, thus avoiding the added burden of changes to the robotics and interference with other scheduled outage activities. The inspection scheme assumed the result of each of three sample inspections would be no worse than a C-2 category. (In hindsight, as noted below, the approach was in error since it did not follow the intent of the progressive logic of Table 4.4-2). In addition, the Refuel 7 eddy current scope was developed to provide at least 20% tube coverage to be consistent with the EPRI "PWR Steam Generator Examination Guidelines, Revision 2".

The approach used a first sample inspection of 3% of the tubes per steam generator, a second sample inspection of 6% more tubes per generator and a third sample inspection of an additional 12% of the tubes per steam generator. This results in a total inspection population of 21% of the tubes. For conservatism, a 22% sample size was decided upon. The 22% sample was then randomly selected as a total group and the eddy current examination was performed. However, upon review following the inspection, it was realized that the 3% first sample as well as the second and third sample sets had in fact not been randomly selected and tracked within the randomly generated 22% sample. Therefore, it is not possible to determine if, following the progressive logic of Table 4.4-2, a sufficient number of defective tubes would have been identified in

the first or second sample sets to produce a C-3 category result requiring inspection of all tubes in the generator.

However, Florida Power Corporation considers the inspection scheme used adequate to verify the integrity of the OTSG pressure boundary and that no safety concern exists. This conclusion is based on the small number of defective tubes identified when compared to the large sample of tubes inspected. FPC will assure that future eddy current inspections will follow the progressive logic intent of Technical Specifications Table 4.4-2.

TABLE 4.6-2  
STEAM GENERATOR TUBE INSPECTION

1ST SAMPLE INSPECTION			2ND SAMPLE INSPECTION		3RD SAMPLE INSPECTION	
Sample Size	Result	Action Required	Result	Action Required	Result	Action Required
A minimum of 5 tubes per S.G.	C-1	None	N/A	N/A	N/A	N/A
	C-2	Plug defective tubes and inspect additional 25 tubes in this S.G.	C-1	None	N/A	N/A
			C-2	Plug defective tubes and inspect additional 45 tubes in this S.G.	C-1	None
			C-3	Perform action for C-3 result of first sample	C-2	Plug defective tubes.
					C-3	Perform action for C-3 result of first sample.
	C-3	Inspect all tubes in this S.G., plug defective tubes, and inspect 25 tubes in each other S.G.  Notify NRC pursuant to 10 CFR 50.72.	All other S.G.s are C-1	None	N/A	N/A
			Some S.G.s C-2 but no additional S.G.s are C-3	Perform action for C-2 result of second sample.	N/A	N/A
			Additional S.G. is C-3	Inspect all tubes in each S.G. and plug defective tubes. Notify NRC pursuant to 10 CFR 50.72.	N/A	N/A

S =  $\frac{3n}{N}$  Where N is the number of steam generators in the unit and n is number of steam generators inspected during inspection.

CRYSTAL RIVER - UNIT 3

3/4 4-12

Amendment No. 90

ENCLOSURE 1

ATTACHMENT 2

Eddy Current Testing on "A" and "B" Steam Generators.

"A" Steam Generator - Ten Tubes Plugged

<u>Row</u>	<u>Col</u>	<u>% Thruwall</u>	<u>Location</u>
63	129	44	10th TSP
64	127	45	10th TSP
69	130	43	10th TSP
77	3	55	15th TSP
77	4	42	15th TSP
77	124	41	10th TSP
77	125	48	9th TSP
77	125	46	10th TSP
99	41	45	4th TSP
4	40	38	ADM
25	91	38	ADM

"B" Steam Generator - Twenty Four Tubes Plugged

<u>Row</u>	<u>Col</u>	<u>% Thruwall</u>	<u>Location</u>
27	93	67	8th TSP
27	93	70	7th TSP
28	93	40	8th TSP
34	61	61	UTS
78	49	40	UTS
79	37	55	11th TSP
88	39	47	7th TSP
96	33	65	LTS
98	28	66	LTS
98	44	43	LTS
109	34	53	LTS
116	46	54	LTS
124	39	56	7th TSP
125	9	42	8th TSP
126	9	66	8th TSP
145	11	61	7th TSP
146	25	64	8th TSP
87	59	N/A	* UTS Only
64	114	38%	ADM
124	9	38%	ADM
47	1	OBSTRUCTED	ADM
47	2	N/A	** ADM
46	1	N/A	** ADM
43	1	N/A	** ADM
48	2	N/A	** ADM

TSP - Tube Support Plate

UTS - Upper Tube Sheet

ADM - Administrative

LTS - Lower Tube Sheet

\* - Plugged UTS To Match LTS earlier plugged

\*\* - Tubes plugged and Stabilized to surround obstructed tube