

FROM: Florida Pwr & Light Co Miami, Fla R E Uhrig		DATE OF DOC 9-30-75	DATE REC'D 10-9-75	LTR XXX	TWX	RPT	OTHER
TO: Mr Lear		ORIG one signed	CC	OTHER	SENT NRC PDR	XX	
					SENT LOCAL PDR	XX	
CLASS	UNCLASS XXXXX	PROP INFO	INPUT	NO CYS REC'D 1	DOCKET NO: 50-250 <u>251</u>		

DESCRIPTION:  
Ltr trans the following:  
  
NOTE: DELAY IN DISTRIBUTION OF THIS ITEM DUE TO NECESSITY OF HAVING TO AWAIT THE ENCLOSURE TO THE LETTER. ENCLOSURES REC'D ON 2-2-76.  
  
.PLANT NAME: Turkey Point 3 & 4

ENCLOSURES:  
Information concerning Generator Water Chemistry Control conversion from phosphat treatment to AVT....(40 cys encl; rec'd)  
  
**ACKNOWLEDGED**  
**DO NOT REMOVE**

SAFETY	FOR ACTION/INFORMATION	ENVIRO	2-6-76	ehf
ASSIGNED AD _____	ASSIGNED BRANCH CHIEF _____			
BRANCH CHIEF <u>Purple (5)</u>	PROJECT MANAGER _____			
PROJECT MANAGER <u>Elliott</u>	LIC ASST. _____ W/ ACRS			
LIC. ASST. <u>Pavich</u> W/ 16 CYS ACRS <u>Holdings</u>				

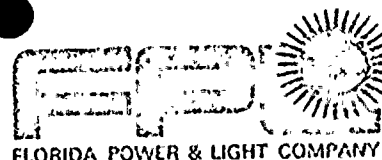
INTERNAL DISTRIBUTION

<u>REG FILES</u>	<u>SYSTEMS SAFETY</u>	<u>PLANT SYSTEMS</u>	<u>SITE SAFETY &amp; ENVIRO ANALYSIS</u>
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OELD	SCHROEDER	BENAROYA	MULLER
GOSSICK/STAFF		LAINAS	<u>ENVIRO TECH.</u>
I&E (2)	<u>ENGINEERING</u>	IPPOLITO	ERNST
MIPC	MACCARY		BALLARD
	KNIGHT	<u>OPERATING REACTORS</u>	SPANGLER
<u>PROJECT MANAGEMENT</u>	SIHWEIL	STELLO	
BOYD	PAWLICKI		<u>SITE TECH.</u>
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MELTZ	NOVAK	BAER	
HELMES	ROSETOCZY	SCHWENCER	<u>MISCELLANEOUS</u>
<u>F. ALMETER</u>	CHECK	GRIMES	

EXTERNAL DISTRIBUTION

LOCAL PDR <u>Miami, Fla</u>	NATIONAL LAB _____ W/ CYS	BROOKHAVEN NAT. LAB
TIC	REGION V-I&E-(WALNUT CREEK)	ULRIKSON (ORNL)
NSIC	LA PDR	
ASLB	CONSULTANTS	

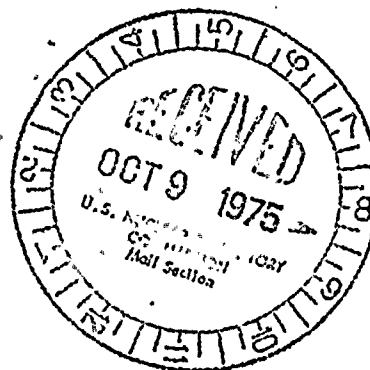
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September 30, 1975  
L-75-475



Director of Nuclear Reactor Regulation  
ATTN: Mr. George Lear, Chief  
Operating Reactors Branch No. 3  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555



Dear Mr. Lear:

Re: Integrity of Steam Generator Tubes  
Turkey Point Units 3 and 4  
Docket Nos. 50-250 & 50-251

Turkey Point Units 3 and 4 steam generator water chemistry control has been converted from phosphate treatment to AVT. Unit 3 conversion was accomplished in October, 1974, and Unit 4 conversion was accomplished in August, 1974. Your letter of September 22, 1975, stated that the Nuclear Regulatory Commission staff is particularly interested in the operating experience of such "conversion" plants and, therefore, you requested that we provide certain information concerning our chemistry conversion and steam generator tube inspections. The following input is provided.

1. Steam Generator (S/G) Tube Inspections (Chronologically)

A. S/G: 4A, 4B, 4C

DATE: February, 1973

REASON: Preservice and Baseline Eddy Current (EC)  
Inspection

TUBES INSPECTED: 100 percent of the tubes in the inlet sides of each steam generator at a frequency of 400 KHz up to the first support. Additionally, a nominal 10 percent of the inlet tubes in each generator were examined at 400 KHz completely around the U-bend to the top support on the outlet side. See Appendix A to this report for tubesheet plan indicating those tubes examined completely around the U-bend.

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**DEFECT INDICATIONS:** None other than minor scratches on the inside of the tubes and minor localized denting of the tube wall. A complete listing of those tubes exhibiting the above mentioned indications is given in Appendix A.

**TUBES PLUGGED:** None

**B. S/G:** 3B

**DATE:** December, 1973

**REASON:** Planned Unit 3 maintenance outage provided opportunity to gather baseline EC data on one steam generator. Also provided opportunity for assessment of regions where evidence of tube wall deterioration had been detected in the steam generators of other PWR's installed by our NSSS vendor. In addition, information was to be obtained for correlation studies of the presence of deposits on tube exteriors and on possible low level wall thinning in the region immediately above the tubesheet.

**TUBES INSPECTED:** See Appendix B for tubesheet plans indicating which tubes were inspected.

**DEFECT INDICATIONS:** Distorted tubesheet signals at 100 and 400 KHz in the inlet side between rows 10 and 30 suggest shallow tube wall thinning (<20%) in the region adjacent to the top of the tubesheet. There was no evidence of thinning in any other region. See Appendix B for EC data on the presence of sludge deposits.

**TUBES PLUGGED:** None

**C. S/G:** 4A

**DATE:** January, 1974

**REASON:** Planned Unit 4 maintenance outage provided opportunity to gather baseline EC data for use in evaluating a new secondary chemistry control program. Also provided opportunity to gather information for correlation studies of the presence of deposits on tube exteriors and on the phenomena of low level tube wall thinning.



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**TUBES INSPECTED:** 61 tubes were EC tested at 100KHz in both the inlet and outlet side up to the first support. See Appendix C for tubesheet plan indicating which tubes were inspected.

**DEFECT INDICATIONS:** Distorted tubesheet signals at 100 KHz in all inlet tubes examined suggest shallow tube wall thinning (<<20%) in the region adjacent to the top of the tubesheet. There was no evidence of thinning in any other region.

**TUBES PLUGGED:** None

D. S/G; 4A, 4B, 4C

**DATE:** August - September, 1974

**REASON:** Planned Unit 4 maintenance outage to find and plug leaking tube(s) in 4A, and perform minimal EC inspections of tubes surrounding leaking tube(s). The leaking tube was found in Row 16, Column 58 on the inlet side. At this time, Florida Power & Light Company elected to convert to AVT chemistry, therefore, a full scale EC inspection of all three steam generators was initiated to provide examinations of regions where evidence of tube wall thinning had been detected in similar generators of other operating plants. In addition, tube lancing was conducted to remove sludge from the top of the tubesheets. An estimated 30,000 gallons of water were used during the sludge lancing effort.

**TUBES INSPECTED:** 2024 at 400 KHz in 4A inlet.  
463 at 400 KHz in 4A outlet.  
2142 at 400 KHz in 4B inlet.  
24 at 400 KHz in 4B outlet.  
2104 at 400 KHz in 4C inlet.  
38 at 400 KHz in 4C outlet.

See Appendix D for tubesheet plans indicating which tubes were inspected.

**DEFECT INDICATIONS:** 34 tubes in the 4A inlet, 43 tubes in the 4B inlet, and 8 tubes in the 4C inlet showed greater than 50 percent thinning. Several other inlet tubes showed between 20 and 49 percent thinning. Of all the outlet tubes inspected, only 6 tubes in 4A showed greater than 20 percent thinning. See Appendix D data sheets for defect locations and degree of tube thinning.



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September 30, 1975

**TUBES PLUGGED:** Inlet tubes with greater than 50% thinning.  
See Appendix D data.  
**PLUGGING LIMIT:** 50 percent wall thinning.

E. S/G: 3A

DATE: September, 1974

REASON: Planned Unit 3 maintenance outage to find and plug leaking tube (s), and perform minimal EC inspections of tubes surrounding leaking tube(s). The leaking tube was found in Row 43, Column 34 on the inlet side.

**TUBES INSPECTED:** 5 tubes were EC tested at 400 KHz in the inlet side. They were the leaking tube and the four tubes surrounding it.

**DEFECT INDICATIONS:** The tube in Row 43, Column 34 in the inlet side showed 100 percent tube wall thinning. See Appendix E for tubesheet diagram showing this location.

**TUBE PLUGGED:** R43, C34 inlet side.

**PLUGGING LIMIT:** 50 percent wall thinning.

F. S/G: 3A, 3B, 3C

DATE: September, 1974

REASON: Unit 3 steam generator tubesheet cleaning was performed in preparation for changeover to AVT chemistry. A high pressure water lancing technique was used. Approximately 10,000 gallons of water were flushed through each generator. See Appendix F for tube sheet lancing schematic.

**TUBES INSPECTED:** Due to the short shutdown, EC testing was not attempted.

**DEFECT INDICATIONS:** Not applicable.

**TUBES PLUGGED:** None

G. S/G: 3A, 3B, 3C

DATE: October - November, 1974

REASON: Unit 3 refueling outage provided opportunity to gather EC data in regions where evidence of tube wall deterioration had been detected in similar steam generators of other operating plants.

**TUBES INSPECTED:** Many tubes were inspected at 400, 100, and 25 KHz. See Appendix G for tubesheet plans indicating which tubes were inspected.

**DEFECT INDICATIONS:** 19 tubes in the 3A inlet, 7 tubes in the 3B inlet, and 6 tubes in the 3C inlet showed greater than 50 percent thinning. Of all the outlet tubes inspected, there was no indication of thinning except in generator 3B. See Appendix G for EC data.

**TUBES PLUGGED:** 19 in 3A, 7 in 3B, and 6 in 3C. All were inlet tubes, the location of which can be found in Appendix G data sheets.

**PLUGGING LIMIT:** 50 percent wall thinning.

**H. S/G:** 4A, 4B, 4C  
**DATE:** May, 1975  
**REASON:** Unit 4 refueling outage provided opportunity to gather extensive EC data.

**TUBES INSPECTED:** The final report of this inspection has not yet been received from our NSSS vendor, therefore, the data on the number and location of tubes inspected are approximate. Specific information identifying which tubes were inspected will be forwarded upon receipt of the inspection report from our NSSS vendor. Approximate data are contained in Appendix H.

**DEFECT INDICATIONS:** 36 tubes in the 4A inlet, 48 tubes in the 4B inlet, and 3 tubes in the 4C inlet showed greater than 40 percent thinning. In addition, 27 tubes in the 4A outlet, 18 tubes in the 4B outlet, and 93 tubes in the 4C outlet showed greater than 40 percent thinning. Specific information on defect locations will be forwarded upon receipt of the inspection report from our NSSS vendor.

**TUBES PLUGGED:**

	<u>Inlet</u>	<u>Outlet</u>
	36 in 4A	27 in 4A
	48 in 4B	48 in 4B
	3 in 4C	93 in 4C

A total of 225 tubes were plugged.

**PLUGGING LIMIT:** 40 percent wall thinning.

**I. S/G:** 4B  
**Date:** August, 1975  
**REASON:** Planned Unit 4 maintenance outage to find and plug leaking tube(s).



Specific information on tubes inspected and defect indications will be forwarded upon receipt of the inspection report from our NSSS vendor.

J. S/G: 4B

DATE: September, 1975

REASON: Planned Unit 4 maintenance outage to find and plug leaking tube(s).

Specific information on tubes inspected and defect indications will be forwarded upon receipt of the inspection report from our NSSS vendor.

2. Secondary Water Chemistry

- A. Current steady-state and transient limits for AVT are contained in Appendix I to this letter.
- B. Limits for phosphate treatment during the time prior to AVT conversion are also contained in Appendix I to this letter.
- C. Appendix J contains general guidelines for transition from phosphate treatment to AVT.
- D. We are unable to provide secondary water chemistry graphs for the six months prior to termination of phosphate treatment and for the time from the onset of AVT to the present. This information is available only in numerical form and comprises several hundred data sheets. However, if the information would be useful to you in this form, we will provide copies upon request.

Very truly yours,



Robert E. Uhrig  
Vice President

REU:nch  
Attachments

cc: Jack R. Newman, Esquire