NRC FORM 195 (2-76)

U.S. NUCLEAR REGULATORY COMMISSION

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

DOCKET NUMBER 50-250 & 251

FILE NUMBER

TO: Mr Lear

FROM: Florida Power & Light Co
Miami, Fla
R E Uhrig

DATE OF DOCUMENT 1-21-77

DATE RECEIVED 1-28-77

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PROP

INPUT FORM

NUMBER OF COPIES RECEIVED one signed

DESCRIPTION

Ltr re our NRC request....trans the following:

1p

ENCLOSURE

Addl info re steam Generator Tube Integrity ....(40 cys encl rec'd)

6p

PLANT NAME: Turkey Point #3 & 4

DO NOT REMOVE

ACKNOWLEDGED

FOR ACTION/INFORMATION ENVIRO 1-28-77 ehf

SAFETY		ENVIRO	
ASSIGNED AD:		ASSIGNED AD:	
BRANCH CHIEF:	Lear (5)	BRANCH CHIEF:	
PROJECT MANAGER:	Elliott	PROJECT MANAGER:	
LIC. ASST. :	Parrish	LIC. ASST. :	

INTERNAL DISTRIBUTION

REG FILE	SYSTEMS SAFETY	PLANT SYSTEMS	SITE SAFETY &
NRC PDR	HEINEMAN	TEDESCO	ENVIRO ANALYSIS
I & E (2)	SCHROEDER	BENAROYA	DENTON & MULLER
OELD		LAINAS	
GOSSICK & STAFF	ENGINEERING	IPPOLITO	ENVIRO TECH.
MIPC	MACARRY	KIRKWOOD	ERNST
CASE	KNIGHT		BALLARD
HANAUER	SIHWEIL	OPERATING REACTORS	SPANGLER
HARLESS	PAWLICKI	STELLO	
			SITE TECH.
PROJECT MANAGEMENT	REACTOR SAFETY	OPERATING TECH.	GAMMILL
BOYD	ROSS	EISENHUT	STEPP
P. COLLINS	NOVAK	SHAO	HULMAN
HOUSTON	ROSZTOCZY	BAER	
PETERSON	CHECK	BUTLER	SITE ANALYSIS
MELTZ		GRIMES	VOLLMER
HELTEMES	AT & I		BUNCH
SKOVHOLT	SALTZMAN		J. COLLINS
	RUTBERG		KREGER

EXTERNAL DISTRIBUTION

CONTROL NUMBER 986 MR4

LPDR: Miami, Fla	NAT. LAB:	BROOKHAVEN NAT. LAB.
TIC:	REG V.IE	ULRIKSON (ORNL)
NSIC:	LA PDR	
ASLB:	CONSULTANTS:	
ACRS 76 CYS ~~HOLDING~~/SENT	As CAT B 1/28/77	

NRC FORM 195 (2-76)

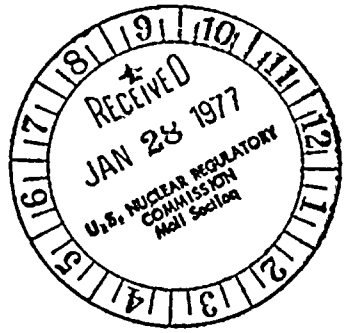
P. O. BOX 013100, MIAMI, FL 33101

FLORIDA POWER & LIGHT COMPANY

Regulatory Docket File

January 21, 1977
L-77-30

Director of Nuclear Reactor Regulation
Attention: Mr. George Lear, Chief
Operating Reactors Branch #3
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Mr. Lear:

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Steam Generator Tube Integrity
Supplemental Information

The attached information is submitted in response to a request from your staff. It supplements previous information submitted in our letters L-76-432, L-76-434, and L-77-3.

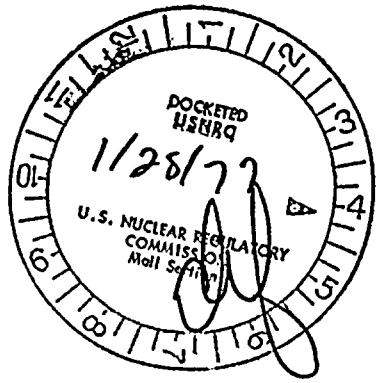
Very truly yours,

Robert E. Uhrig
Vice President

REU/MAS/ms

Attachment

cc: Norman C. Moseley, Region II
Robert Lowenstein, Esquire



986

ATTACHMENT

Turkey Point Units 3 and 4
Request for Information
Steam Generator Tube Integrity

Q13. Provide a tabulation summary of the total strains in the circumferential, longitudinal and radial direction at the U-bend apex for tubes at flow slot locations in rows 1 to 4. The summary should indicate the effects due to manufacturing, service induced ovality (hourglassing), change in U-bend radius, operating thermal and pressure loads and accident loads. Also compute the effective strains at the U-bend apex.

Clarification of above question.

a. Provide the requested tabulation for a total of 32 tubes (eight tubes adjacent to the flow slot in rows 1 through 4.)

b. For the tubes in row 1 provide the requested tabulation for the following two cases.

(1) Flow slot hourglassing based on current field data for the top support plate in Steam Generator 4B

(2) Assuming full closure of the flow slot

c. For those tubes in rows 2, 3 and 4 provide the requested tabulation assuming full closure of the flow slot.

A13. As indicated in our response to Question 1, the operating thermal and pressure strains are trivial and can be neglected. Similarly, the strains due to SSE and other accident loads are quite small and are effectively zero when compared to those due to hourglassing. Our table will only include manufacturing and in-service (hourglassing) strains and a summation for each quantity requested. The summation is inclusive of operating and accident conditions.

TABLE 1

ROW 1 @ CURRENT HOURGLASSING (UNIT 4)

Column		ε_{axial}	ε_{hoop}	ε_{radial}	$\varepsilon_{equ.}$
Mfg. ε		.177	.004	-.040	.133
85	H	.014	.008	-.004	.141
	T	.191	.012	-.044	
86	H	.013	.009	-.004	.140
	T	.190	.013	-.044	
87	H	.012	.009	-.004	.140
	T	.189	.013	-.044	
88	H	.010	.008	-.003	.138
	T	.187	.012	-.043	
89	H	.007	.004	-.002	.137
	T	.184	.008	-.042	
90	H	.004	.003	-.001	.134
	T	.121	.007	-.041	
91	H	*	*	*	.133
	T	.177	.004	-.040	
92	H	*	*	*	.133
	T	.177	.004	-.040	

* - No Leg Displacement

H - Strains due to hourglassing

T - Total Strains

TABLE 2

ROW 1 @ FULL CLOSURE

Column	Mfg. ε	ε_{axial}	ε_{hoop}	ε_{radial}	$\varepsilon_{equ.}$
		.177	.004	-.040	.132
85	H	.044	.043	-.014	.160
	T	.221	.047	-.054	
86	H	.043	.043	-.014	.160
	T	.220	.047	-.054	
87	H	.038	.039	-.012	.156
	T	.215	.043	-.052	
88	H	.031	.032	-.010	.131
	T	.208	.036	-.050	
89	H	.023	.019	-.007	.146
	T	.200	.023	-.047	
90	H	.012	.009	-.004	.139
	T	.189	.013	-.044	
91	H	*	*	*	.133
	T	.177	.004	-.040	
92	H	*	*	*	.133
	T	.177	.004	-.040	

* - No Leg Displacement

H - Strains due to hourglassing

T - Total Strains

TABLE 3

ROW 2 @ FULL CLOSURE

Column	Mfg. / ε	ε_{axial}	ε_{hoop}	ε_{radial}	$\varepsilon_{equ.}$
		.112	.003	-.030	.085
85	H	.022	.034	-.024	.109
	T	.134	.037	-.054	
86	H	.022	.034	-.023	.108
	T	.134	.037	-.053	
87	H	.021	.027	-.021	.106
	T	.133	.030	-.051	
88	H	.018	.021	-.018	.104
	T	.130	.024	-.048	
89	H	.013	.011	-.013	.099
	T	.125	.014	-.043	
90	H	.008	.006	-.008	.093
	T	.120	.009	-.030	
91	H	*	**.003	*	.085
	T	.112	.006	-.030	
92	H	*	**.004	*	.085
	T	.112	.007	-.030	

* - No Leg Displacement

H - Strains due to hourglassing

T - Total Strains

** - These strains result from dimensions taken from the removed tubes. A possible explanation is that these tubes had higher ovality, as manufactured, than the statistical average.

TABLE 4

ROW 3 @ FULL CLOSURE

Column		ε_{axial}	ε_{hoop}	ε_{radial}	$\varepsilon_{equ.}$
Mfg. ε		.082	.005	-.020	.061
85	H	.015	.018	-.024	.081
	T	.097	.023	-.044	
86	H	.015	.018	-.023	.081
	T	.097	.023	-.043	
87	H	.013	.013	-.021	.079
	T	.095	.013	-.041	
88	H	.011	.009	-.017	.075
	T	.093	.014	-.037	
89	H	.009	.004	-.012	.072
	T	.091	.009	-.032	
90	H	.005	.001	-.006	.067
	T	.087	.006	-.026	
91	H	*	*	*	.061
	T	.082	.005	-.020	
92	H	*	*	*	.061
	T	.082	.005	-.020	

* - No Leg Displacement

H - Strains due to hourglassing

T - Total Strains

TABLE 5

ROW 4 @ FULL CLOSURE

Column		ε_{axial}	ε_{hoop}	ε_{radial}	$\varepsilon_{equ.}$
Mfg. ε		.064	.002	-.020	.050
85	H	.012	.014	-.024	.069
	T	.076	.016	-.044	
86	H	.012	.014	-.023	.069
	T	.076	.016	-.043	
87	H	.011	.011	-.021	.067
	T	.075	.013	-.041	
88	H	.010	.007	-.017	.064
	T	.074	.009	-.037	
89	H	.007	.003	-.012	.060
	T	.071	.005	-.032	
90	H	.004	.002	-.007	.056
	T	.068	.004	-.027	
91	H	*	*	*	.050
	T	.064	.002	-.020	
92	H	*	*	*	.050
	T	.064	.002	-.020	

* - No Leg Displacement

H - Strain due to hourglassing

T - Total Strain