NRC FORM 195 (2-76) U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NUMBER 50-335

FILE NUMBER

NRC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

TO: V. STELLO	FROM: FLORDIA POWER & LIGHT CO. MIAMI, FLORDIA R.E. UHRIG	DATE OF DOCUMENT 11-18-76 DATE RECEIVED 11-22-76
☐LETTER ☒ORIGINAL ☐COPY ☐NOTORIZED ☒UNCLASSIFIED	PROP	INPUT FORM
		NUMBER OF COPIES RECEIVED 40

DESCRIPTION
LTR. FURNISHING SUPPLEMENTAL INFORMATION TO REPAIR REPORT CEN-38(f)-P, REV.1..W/Attached TABLE 1.....

(3 SIGNED CYS. RECEIVED)
(4 PAGES)

PLANT NAME: ST. LUCIE # 1

ENCLOSURE

ACKNOWLEDGED

DO NOT REMOVE

SAFETY FOR ACTION/INFORMATION ENVIRO SAB 11-22-76

	ASSIGNED AD:			ASSIGNED AD:
/	BRANCH CHIEF:	ZIEMANN W/6		BRANCH CHIEF:
	PROJECT MANAGER:			PROJECT MANAGER:
/	LIC. ASST.:	DIGGS		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		MACCARRY		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

/	LPDR: FT. PIERCE, FLA		NAT LAB:	BROOKHAVEN NAT LAB
/	TIC:		REG. VIE	ULRIKSON(ORNL)
/	NSIC:		LA PDR	
	ASLB:		CONSULTANTS	
/	ACRS 16CYS ~~HOLD/SENT~~		ACRS CAT " "	

CONTROL NUMBER 11887

NRC FORM 195 (2-76)

P. O. BOX 013100, MIAMI, FL 33101

FLORIDA POWER & LIGHT COMPANY

RECEIVED USNRC NOV 22 1976 Mail Section Docket Clerk

Regulatory File Cy.

November 18, 1976
L-76-401

RECEIVED NOV 22 1976 U.S. NUCLEAR REGULATORY COMMISSION Mail Section

Office of Nuclear Reactor Regulation
Attn: Victor Stello, Jr., Director
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Stello:

Re: St. Lucie Unit No. 1
Docket No. 50-335
Repair Report CEN-38(f)-P, Rev. 1
Supplemental Information

This letter supplements the information contained in the subject report. It also serves to document the results of recent discussions with members of your staff.

Section V of the subject report indicates that the startup test program include measurements of rod worths of CEA Group 1 and shutdown group B only if the measurements of CEA groups 7,6,5,4,3, and 2 differ from predictions by a significant variation.

Rod worth measurements are to be made with the following two objectives in mind:

1) To verify adequate shutdown margin as defined in Section 1.13 of the Technical Specifications.

2) To compare to design calculations. Measurements are generally expected to agree with design values within ∿10% or 0.1% $\Delta\kappa/\kappa$, whichever is larger.

To satisfy these requirements, the following rod worth measurements shall be performed during the startup physics tests. CEA groups 7,6,5,4,3,2 will be measured and compared to design calculations as described in item 2) above. If these measurements (7-2) fail the above acceptance criteria, groups 1 and B shall also be measured. If the sum of groups 7 through 1 and shutdown group B differ by more than 10% from the design values, then the design calculations shall be reviewed.

11887

Table 1 contains the design reactivity parameters associated with the calculation of shutdown margin. It is seen that measurement of CEA groups 7-2 represents more than 85% (5% $\Delta k/k$ less 10% for uncertainty ~4.5% $\Delta k/k$) of the rod worth required to maintain shutdown margin (5.05% $\Delta k/k$). Therefore, adequate margin would be ensured unless predictions of the worth of the remaining rods were in error by more than 80%. However, the revised design calculations demonstrate that the rod worths are essentially unchanged from beginning of life (BOL) and the BOL measurements of all rods (7-1, A&B) are in excellent agreement with the original predictions.

The following additional at power monitoring is to be performed if the excore mode described in paragraph 4.2.1.2 of the Technical Specifications is used and the core burnup is less than 10 GWD/MTU. This core burnup ensures that, in the unlikely event of redistribution and loss of the remaining boron in a fashion similar to that experienced with the original shims, the resultant axial and radial power peaks would be within the original design criteria. This additional monitoring will be sufficient to ensure that if the anomaly were to reoccur, it would be detected prior to original design criteria being exceeded.

1. The axial peaking factor is to be monitored in the maximum number of bundles possible via fixed incore Rh detectors. The surveillance period shall be sufficient to ensure that the axial peak increases less than 3% between measurements based on the average growth rate from the most recent measurements, but not to exceed 7 operating days.

   A 3% per day growth rate in the axial peak shall be assumed until measurements are available. All measured growth rates shall be doubled to account for measurement and projection uncertainties.

2. Core power maps are to be taken weekly (7 operating days) and compared with predicted distributions.

Additional monitoring using the traversing incore probes has been evaluated. Design calculations and measurements with incore movable fission detectors demonstrate that boron loss and redistribution as experienced in the original pins do not cause local power perturbations that can be detected at the

instrument thimble (both the Rh and fission detector thimbles are located in the center guide tube). We have concluded, therefore, that additional monitoring using the traversing in-core probes would not be appropriate.

Very truly yours,

Robert E. Uhrig
Vice President

REU/NLR/hlc
Attachment

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

TABLE 1

DESIGN REACTIVITY PARAMETERS
&
SHUTDOWN MARGIN CALCULATIONS

Power Defect (Doppler + Moderator)	2.3		
Transient Xenon	.1		
CEA Bite & Boron Deadband	.2		
P/L CEA Effects	0.0		
Shutdown Margin & Accident Analysis Allowance	2.45		
Total Reactivity Change (unrodded)	5.05	%Δρ	
Rodworth CEA Groups 7-2	5.0	%Δρ	*
Rodworth CEA Groups 1&B	1.1		*
Rodworth CEA Group A	4.1		*
Rodworth Stuck Rod	-2.7		*
Rodworth All Rods - Stuck Rod	7.5		
Measurement Uncertainty	- .8		
Available Rodworth less Uncertainty	6.8	%Δρ	
Rodworth Excess of Shutdown Margin less Measurement Uncertainty	1.0	%Δρ	

*Preliminary calculations - Revised calculations for individual bank worths are 40% complete. These numbers are projected from the original values using the small differences seen in the revised values.