P. O. BOX 013100, MIAMI, FL 33101

FLORIDA POWER & LIGHT COMPANY

December 20, 1976

PRN-LI-76-303

Central File
50-335

Mr. Norman C. Moseley, Director, Region II
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
230 Peachtree Street, N. W., Suite 818
Atlanta, Georgia 30303

Dear Mr. Moseley:

REPORTABLE OCCURRENCE 335-76-35
ST. LUCIE UNIT 1
DATE OF OCCURRENCE: JULY 10, 1976

POWER DISTRIBUTION ANOMALIES -
UPDATE REPORT NO. 1

The attached Licensee Event Report is being submitted to update our initial report of July 23, 1976.

Very truly yours,

J R Beuser
for A. D. Schmidt
Vice President
Power Resources

MAS/cpc

Attachment

cc: Robert Lowenstein, Esquire
Director, Office of Inspection and Enforcement (40)
Director, Office of Management Information and
Program Control (3)

July 23, 1976

CONTROL BLOCK: (1–6) UPDATE #1 (PLEASE PRINT ALL REQUIRED INFORMATION)

LICENSEE NAME	LICENSE NUMBER	LICENSE TYPE	EVENT TYPE
FLSLS1 (8–14)	00-00000-00 (15–25)	4111 (26–30)	01 (31–32)

Supplementary

CONT	CATEGORY	REPORT TYPE	REPORT SOURCE	DOCKET NUMBER	EVENT DATE	REPORT DATE
01 (8)	(57–58)	T (59)	L (60)	050-335 (61–68)	071076 (69–74)	122076 (75–80)

EVENT DESCRIPTION

During power ascension testing it was determined that the power distribution in the St. Lucie Unit 1 core was not as predicted for 80% power. Power was reduced to Hot Zero Power conditions and physics testing was performed to determine the cause. The plant was then shut down until evaluation of the test data could be completed. Further investigation as

SYSTEM CODE	CAUSE CODE	COMPONENT CODE	PRIME COMPONENT SUPPLIER	COMPONENT MANUFACTURER	VIOLATION
RC (9–10)	B (11)	FUELXX (12–17)	N (43)	C490 (44–47)	N (48)

CAUSE DESCRIPTION

The cause of the power distribution anomalies has been determined to be perforated burnable poison rods within the fuel assemblies. Boron loss from, and redistribution within, the perforated poison rods were the

FACILITY STATUS	% POWER	OTHER STATUS	METHOD OF DISCOVERY	DISCOVERY DESCRIPTION
B (9)	080 (10–12)	N/A (13–44)	C (45)	N/A (46–60)

FORM OF ACTIVITY RELEASED	CONTENT OF RELEASE	AMOUNT OF ACTIVITY	LOCATION OF RELEASE
Z (9)	Z (10)	N/A (11–44)	N/A (45–60)

PERSONNEL EXPOSURES

NUMBER	TYPE	DESCRIPTION
000 (9–11)	Z (12)	N/A (13–60)

PERSONNEL INJURIES

NUMBER	DESCRIPTION
000 (9–11)	N/A (12–60)

PROBABLE CONSEQUENCES

N/A

LOSS OR DAMAGE TO FACILITY

TYPE	DESCRIPTION
L (9)	Loss of generating capability since July, 1976. (10–60)

PUBLICITY

Press releases made by both FP&L and NRC

ADDITIONAL FACTORS

See Pages two and three for continuation of Event Description and Cause Description.

NAME: M. A. Schoppman PHONE: 305/552-3779

EVENT DESCRIPTION (Continued)

described below in the Cause Description was later performed. (335-76-35)

CAUSE DESCRIPTION (Continued)

sources of the observed anomalies and occurred throughout the core. This conclusion is based on poolside (spent fuel pool) inspections, hot cell observations, and laboratory testing, as well as the pre-shutdown core flux measurements. Briefly, the following was done:

(1) A statistically significant number of fuel assemblies containing poison rods were visually inspected at poolside. From these observations it was evident that perforated poison rods were distributed throughout the core. It should be noted that no fuel rod anomalies were observed.

(2) Poison rods were then removed from selected fuel assemblies for visual and eddy current testing in the spent fuel pool.

(3) Based on (1) and (2) above, poison rods were sent to outside consultants for hot cell examination and reactivity measurements.

The results from (1), (2), and (3) confirmed the cause to be boron loss from, and redistribution within, the poison rods.

After review and approval in accordance with 10 CFR 50.59, the original poison rods were removed, and replaced by new poison rods. A retention assembly was added to provide supplementary rod retention capability at that portion of each flow plate which was removed to allow access to the poison rod locations. The replacement burnable poison rods are of essentially the same design as the rods described in the FSAR except for minor changes which minimize the probability for recurrence of the mechanism which caused the failures among the original rods, and minor changes to update the rods to the vendor's latest design. The boron content is equivalent to the as-built loading in the original rods.

CAUSE DESCRIPTION (Continued)

This reworking process results in fuel assemblies which are not significantly changed from the original design. A design review has demonstrated that the reworked fuel assemblies have no significant effect on the nuclear and thermal hydraulic aspects of core performance. All input parameters to the accident and transient analysis have been reviewed to determine the effect of the poison rod replacement. It has been determined that all key input parameters are bounded by the values used in the FSAR.

Based on the evaluations made, it is concluded that the reworked fuel assemblies can be operated at full power throughout the original design life. Changes to the FSAR and Technical Specifications are not required and operation does not result in an unreviewed safety question.

For further details see our "St. Lucie Unit #1 Repair Report" CEN-38 (F), Revision 1.