

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) St. Lucie, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 3 5					PAGE (3) 1 OF 0 3	
TITLE (4) STEAM GENERATOR TUBE WITH GREATER THAN 40% THROUGH WALL PENETRATION NOT PLUGGED DUE TO PERSONNEL ERROR																
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)						
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES N/A				DOCKET NUMBER(S) 0 5 0 0 0 3 3 5			
0 2	2 7	8 7	8 7	0 0 4	0 0	0 3	2 9	8 7					0 5 0 0 0			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)														
6		20.402(b)				20.406(c)				50.73(a)(2)(iv)				73.71(b)		
POWER LEVEL (10)		20.406(a)(1)(i)				50.36(e)(1)				50.73(a)(2)(v)				73.71(c)		
0 0 0		20.406(a)(1)(ii)				50.36(e)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		20.406(a)(1)(iii)				X 50.73(a)(2)(i)				50.73(a)(2)(viii)(A)						
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)						
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME W. C. Green, Shift Tech. Advisor										TELEPHONE NUMBER						
										AREA CODE 3 0 5 4 6 5 - 3 5 5 0						
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC						
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

**ABSTRACT**

On February 27, 1987 during performance of the Eddy Current Test (ECT) of the B Steam Generator (S/G) on Unit #1, a discrepancy was discovered in the plugging pattern. A tube in the B S/G, which was supposed to have been plugged during the Spring 1986 outage, was plugged in the hot leg side only. A review of the video tape of the manual plugging installation identified that the cold leg plug was inadvertently installed in the wrong location.

The root cause of the event was a cognitive personnel error by both utility and contractor maintenance personnel who failed to detect the plugging error. An automated plugging system was used during this outage to properly install any needed plugs, thus preventing any misplacements that might occur if done manually.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	— 0 0 4	— 0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

**DESCRIPTION OF EVENT**

At approximately 0930 hours on February 27, 1987, during performance of the Eddy Current Test (ECT) of Unit #1 B Steam Generator (S/G) (EIIS:AB), a discrepancy was discovered in the tube plugging pattern. The unit was in Mode 6 (Refueling) fully depressurized with temperatures at 90 F. The ECT was supported by utility trained maintenance personnel, complemented by contractor maintenance personnel as advisors. While performing ECT on B S/G tube location row 116 - line 124, which was supposed to have been plugged by contractor personnel during the Spring 1986 outage, a plug was found in the hot leg side only. It was also noted that in the B S/G tube location row 16 - line 124, which was not supposed to be plugged, a plug was found in the cold leg only. After discovery of the tube plugging pattern discrepancy, a review of the Spring 1986 outage video tape of the manual plug installation was conducted. The review of the tape identified that the plug intended for B S/G tube location row 116 - line 124 cold leg was inadvertently installed in B S/G tube location row 16 - line 124 by the contractor maintenance personnel plugging crew. To correct the situation, it has been reviewed and decided upon by both utility and contractor management personnel to install tube plugs in both the cold leg of B S/G row 116 - line 124 and the hot leg of B S/G row 16 - line 124. The tubes were plugged and the event was terminated during the evening of March 4, 1987.

**CAUSE OF THE EVENT**

The root cause of the event was a cognitive personnel error by utility and contractor maintenance personnel. When manually plugging the B S/G tube location row 116 - line 124, the plug for the cold leg was inadvertently installed in the wrong location at row 16 - line 124. The error could have been the result of the working environment in the B S/G. Because of the high radiation and contamination levels in the S/G, the work has to be done quickly to keep exposure levels as low as reasonably achievable and has to be performed in cumbersome protective clothing. The error was made in a row 100 units from the desired location. The pluggers may have thought they were at row 116 when actually they were at row 16. Viewing of the plugging video tape should have discovered the error but during the review it was not detected. The recent review of the tape shows the error being made.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

**ANALYSIS OF THE EVENT**

The event was determined reportable based on the violation of Technical Specification T/S surveillance requirement 4.4.5.4.a.6, which states that any tube which indicates greater than 40% through-wall penetration shall be removed from service prior to exceeding 200° F. With B S/G tube location row 116 - line 124 not correctly plugged while indicating a through-wall penetration of 62%, the above T/S surveillance requirement was violated. From the time of the violation until it was discovered was approximately 255 days and from the time of discovery until the tube was satisfactorily plugged was 6 days. An assessment of the safety consequences and implication of this event has been made and determined to be insignificant. The Unit 1 Final Updated Safety Analysis Report (FUSAR), section 15.4.4, analyzes the plant response for a S/G tube double ended break. The result of such an event does not exceed any acceptance criteria or guidelines of 10 CFR 100. The health and safety of the public were not affected by this event.

**CORRECTIVE ACTIONS**

To prevent any reoccurrence of a manually misinstalled tube plug, an automated computerized plugging system was used this outage. This system allows the coordinates of the tube to be plugged to be entered in the computer outside the S/G via a keyboard. A contractor Quality Control (QC) inspector verifies the indexed location is correct. The tube plug is then automatically installed in the desired location. The machine indexing is frequently verified by indexing to a known location and verified by the contractor's inspector.

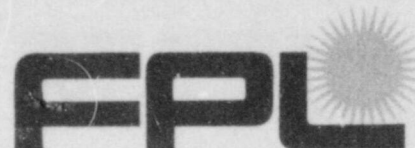
**ADDITIONAL INFORMATION****FAILED COMPONENT INFORMATION:**

No component or system failures occurred during this event.

**PREVIOUS SIMILAR EVENTS:**

See LER 335-84-002 for a previous deviation from Technical Specifications concerning S/G tube plugging.





MARCH 30 1987

L-87-143  
10 CFR 50.73

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

Gentlemen:

Re: St. Lucie Unit I  
Docket No. 50-335  
Reportable Event 87-04  
Date of Event: February 27, 1987  
Steam Generator Tube with  
Greater Than 40% Through Wall Material Loss

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73.a. to provide notification on the subject event.

Very truly yours,

E. O. Woody  
Group Vice President  
Nuclear Energy

COW/GRM/gp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, St. Lucie Plant

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