# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8808290228 DOC.DATE: 88/08/22 NOTARIZED: NO DOCKET #
FACIL:50-335 St. Lucie Plant, Unit 1, Florida Power & Light Co. 05000335
AUTH.NAME AUTHOR AFFILIATION
CONNOR,J.W. Florida Power & Light Co.
CONWAY,W.F. Florida Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-006-00:on 880723,steam generator tubes found not plugged,per Tech Specs due to personnel error.
W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

| | RECIPIENT ID CODE/NAME | COPIES LTTR | COPIES ENCL | RECIPIENT ID CODE/NAME | COPIES LTTR | COPIES ENCL |
|---|---|---|---|---|---|---|
| | PD2-2 LA | 1 | 1 | PD2-2 PD | 1 | 1 |
| | TOURIGNY,E | 1 | 1 | | | |
| INTERNAL: | ACRS MICHELSON | 1 | 1 | ACRS MOELLER | 2 | 2 |
| | ACRS WYLIE | 1 | 1 | AEOD/DOA | 1 | 1 |
| | AEOD/DSP/NAS | 1 | 1 | AEOD/DSP/ROAB | 2 | 2 |
| | AEOD/DSP/TPAB | 1 | 1 | ARM/DCTS/DAB | 1 | 1 |
| | DEDRO | 1 | 1 | NRR/DEST/ADS 7E | 1 | 0 |
| | NRR/DEST/CEB 8H | 1 | 1 | NRR/DEST/ESB 8D | 1 | 1 |
| | NRR/DEST/ICSB 7 | 1 | 1 | NRR/DEST/MEB 9H | 1 | 1 |
| | NRR/DEST/MTB 9H | 1 | 1 | NRR/DEST/PSB 8D | 1 | 1 |
| | NRR/DEST/RSB 8E | 1 | 1 | NRR/DEST/SGB 8D | 1 | 1 |
| | NRR/DLPQ/HFB 10 | 1 | 1 | NRR/DLPQ/QAB 10 | 1 | 1 |
| | NRR/DOEA/EAB 11 | 1 | 1 | NRR/DREP/RAB 10 | 1 | 1 |
| | NRR/DREP/RPB 10 | 2 | 2 | NRR/DRIS/SIB 9A | 1 | 1 |
| | NUDOCS-ABSTRACT | 1 | 1 | REG FILE 02 | 1 | 1 |
| | RES TELFORD,J | 1 | 1 | RES/DSIR DEPY | 1 | 1 |
| | RES/DSIR/EIB | 1 | 1 | RGN2 FILE 01 | 1 | 1 |
| EXTERNAL: | EG&G WILLIAMS,S | 4 | 4 | FORD BLDG HOY,A | 1 | 1 |
| | H ST LOBBY WARD | 1 | 1 | LPDR | 1 | 1 |
| | NRC PDR | 1 | 1 | NSIC HARRIS,J | 1 | 1 |
| | NSIC MAYS,G | 1 | 1 | | | |

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TOTAL NUMBER OF COPIES REQUIRED: LTTR 46 ENCL 45

NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

# LICENSEE EVENT REPORT (LER)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| St. Lucie Unit 1 | 0 5 0 0 0 3 3 5 | 1 OF 0 4 |

TITLE (4) STEAM GENERATOR TUBES WITH GREATER THAN 40% DEGRADATION FOUND NOT PLUGGED IN ACCORDANCE WITH TECH SPECS 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 | DOCKET NUMBER(S) |
| 0 7 | 2 3 | 8 8 | 8 8 | — 0 0 6 — | 0 0 | | | | N/A | 0 5 0 0 0 |
| | | | | | | | | | | 0 5 0 0 0 |

OPERATING MODE (9): 6
POWER LEVEL (10): 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| [ ] | 20.402(b) | [ ] | 20.405(c) | [ ] | 50.73(a)(2)(iv) | [ ] | 73.71(b) |
| [ ] | 20.405(a)(1)(i) | [ ] | 50.36(c)(1) | [ ] | 50.73(a)(2)(v) | [ ] | 73.71(c) |
| [ ] | 20.405(a)(1)(ii) | [ ] | 50.36(c)(2) | [ ] | 50.73(a)(2)(vii) | [ ] | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| [ ] | 20.405(a)(1)(iii) | [X] | 50.73(a)(2)(i) | [ ] | 50.73(a)(2)(viii)(A) | | |
| [ ] | 20.405(a)(1)(iv) | [ ] | 50.73(a)(2)(ii) | [ ] | 50.73(a)(2)(viii)(B) | | |
| [ ] | 20.405(a)(1)(v) | [ ] | 50.73(a)(2)(iii) | [ ] | 50.73(a)(2)(x) | | |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER |
|---|---|
| J. W. Connor, Shift Technical Advisor | AREA CODE 4 0 7 — 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 NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFAC-TURER | REPORTABLE TO NPRDS |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES (If yes, complete EXPECTED SUBMISSION DATE) [X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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


On 7/23/88 during the performance of the Eddy Current Testing (ECT) of the A Steam Generator (S/G) on Unit #1, a discrepancy was discovered in the plugging pattern. A tube in the A S/G, which was supposed to have been plugged during the spring 1987 outage, was found open on both ends. Review of the ECT documentation reveals that the location was not recorded correctly when being transposed from the ECT computer data base to the tube plugging list.

On 7/30/88, during the performance of the ECT of the B S/G, a discrepancy was discovered in the plugging pattern. A tube that was supposed to have been plugged in the Spring 1986 outage, was plugged on the hot leg side only.

The root cause of both events was a cognitive personnel error on the part of both the utility and the contractor.

Corrective Actions include: comparing the computer data to the plugging list to verify that there are no other transpositions, automate the plugging list in a manner to reduce human error, plugging list will be reviewed twice by ECT personnel and independently by Technical Staff, and newly installed plugs will be verified following the plugging operation.


IE22 1/1

NRC Form 366 (9-83)


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PDR ADOCK 05000335
S PDC

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | PAGE (3) |
|---|---|---|---|---|---|
| St. Lucie Unit 1 | 0 5 0 0 0 3 3 5 | 8 8 | — 0 0 6 | — 0 0 | 0 2 OF 0 4 |

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

## DESCRIPTION OF EVENT

A STEAM GENERATOR
On 7/23/88, during the performance of the Eddy Current Testing (ECT) of Unit #1 A Steam Generator (S/G) (EIIS:AB) tubes, 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 being conducted by utility personnel and contractor maintenance personnel. While performing ECT and plug verification, it was discovered that row 46 line 82 was open on both ends. A review from the 1987 ECT data shows that this tube contains indications of degradation in excess of 40% through wall, which would require that the tube be plugged. Further review of the documentation shows that the tube plugging list used in the 1987 outage did not have row 46 line 82 on the list. The list did have row 46 line 88 which does not show any indication of degradation in the 1987 ECT data. An error was made when the technician transposed the data from the ECT computer data base to the tube plugging list. To correct the error, row 46 line 82 was plugged on both hot and cold legs, and row 46 line 88 was left plugged even though it is not degraded.

B STEAM GENERATOR
On 7/30/88, during the performance of ECT of the Unit #1 B 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 being conducted by utility and contractor maintenance personnel. While performing the ECT and plug verification it was discovered that row 116 line 124 on the cold leg was open, when ECT data indicated that it should have been plugged.

In 1986 a mini-outage was held to plug additional tubes in both steam generators because a more conservative criteria had been established. Row 116 line 124 in B S/G was one of the tubes that required plugging under the new criteria. In the spring 1987 refueling outage, during the ECT, it was discovered that row 116 line 124 was not plugged on the cold leg side. This was due to a personnel error influenced by the lack of automation and the difficulties encountered when physically working in a S/G. This error was reported on LER 335-87-004.

In 1987 an automated plugging device (GENESIS) was utilized to plug the S/G tubes including B S/G row 116 line 124. However, during ECT and plug verification in the 1988 outage, it was discovered that row 116 line 124 was still not plugged. It was determined that the operator of the GENESIS machine, through a cognitive personnel error had entered the wrong coordinates and plugged instead, row 116 line 122, cold leg side. Row 116 line 122 shows no indication of degradation as of the 1987 ECT. Row 116 line 124 cold leg has been plugged this outage (1988). Row 116 line 122 hot leg has been plugged as well, even though it is not degraded. Both of the plugging errors were corrected during the 1988 outage.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | PAGE (3) |
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| St. Lucie Unit 1 | 0 5 0 0 0 3 3 5 | 8 8 | — 0 0 6 — | 0 0 | 0 3 OF 0 4 |

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

## CAUSE OF THE EVENT

The root cause of the events was cognitive personnel errors by utility and contractor personnel. The A steam generator misplugging was due to a cognitive personnel error by a utility ECT technician who transposed the data from the ECT computer data base to the tube plugging list. The B steam generator misplugging was due to a cognitive personnel error by the tube plugging contractor who entered the wrong coordinates into the GENESIS machine. The work was covered by approved procedures and there were no unusual conditions of the work location that contributed to the errors.

## ANALYSIS OF THE EVENT

This event was deemed reportable based on the violation of Technical Specification surveillance requirement 4.4.5.4.a.6, which states that any steam generator tube indicating greater than 40% through wall penetration shall be removed from service prior to exceeding 200 F. However, the 1988 ECT of the two tubes previously left unplugged resulted in indications of 62% through wall penetration in both cases. As discussed in Florida Power & Light letter L-86-502, dated December 12, 1986, a sample of typical St. Lucie Plant S/G Tubing with a through wall penetration of 63% has been demonstrated by burst testing to be able to meet the design requirements of Regulatory Guide 1.121 and ASME Section III. Therefore, there was little additional potential for tube failure under accident or normal operating conditions.

In addition, the Unit 1 Final Updated Safety Analysis Report (FUSAR), section 15.4.4, analyzes the plant response for a double ended steam generator tube break. The result of that analysis does not exceed any acceptance criteria or guidelines of 10 CFR 100. Thus, the health and safety of the public were not affected by this event.

## CORRECTIVE ACTIONS

1. Compared 1987 ECT data to 1987 tube plugging list for both units to verify that there are no other errors.

2. Perform 100% ECT and plug verification for Unit #1 steam generators this outage. (this was done on Unit #2 last outage)

3. The procedure will be changed to require that the plugging list will be used as generated automatically from the ECT data thus reducing potential for human error when transposing data.

4. This list will contain signatures for "issued by" and "reviewed by" to assure that it is checked twice by ECT personnel.

5. An independent review of the plugging list will be performed by the St. Lucie Technical staff.

| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | PAGE (3) |
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

CORRECTIVE ACTIONS (continued)

6. Prior to plugging, the plug locations will be marked with ink with the GENESIS machine in automatic. These locations will be verified by putting the GENESIS machine in manual, moving to a known location, then counting tube by tube to the marked location. This will avoid a misplugging due to one incorrect data entry.

7. Following tube plugging operations, all new plugs and their locations will be verified by ECT personnel and plant Quality Control using the video camera attached to the GENESIS machine.

8. The data bases for ECT are in the line/row format. They are being changed to the normal convention of row/line format for the current and future inspections to avoid confusion. The change for Unit 1 is complete and Unit 2 will be completed prior to its next outage.

9. The Human Performance Evaluation System (HPES) coordinator has reviewed this event and his recommendations are included above.

ADDITIONAL INFORMATION

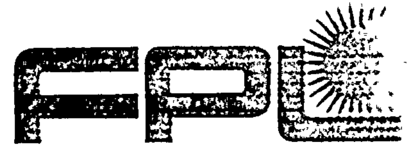
PREVIOUS SIMILAR EVENTS

See LER 335-87-004 for a previous deviation from Technical Specifications concerning S/G tube plugging.



*U.S.GPO:1986-0-624-538/455

P. O. BOX 14000, JUNO BEACH, FL 33408-0420



AUGUST 2 2 1988

L-88-368
10 CFR 50.73

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

Gentlemen:

Re: St. Lucie Unit 1
Docket No. 50-335
Reportable Event: 88-06
Date of Event: July 23, 1988
Steam Generator Tubes with Greater than 40% Degradation found not plugged in accordance with Tech Specs due to Personnel Error

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

Very truly yours,

for W. F. Conway
Senior Vice President - Nuclear

WFC/GRM/cm

Attachment

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

GRMLER02