10CFR50.73

**Virginia Electric and Power Company**
**Surry Power Station**
**P. O. Box 315**
**Surry, Virginia 23883**

December 20, 1993

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

Serial No.: 93-789
SPS:BCB
Docket No.: 50-280
License No.: DPR-32

Dear Sirs:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to Surry Power Station Unit 1.

**REPORT NUMBER**

50-280/93-014-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,

M. R. Kansler
Station Manager

Enclosure

cc: Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| Surry Power Station, Unit 1 | 05000 - 280 | 1 OF 5 |

TITLE (4) Delta Flux Not Logged While Alarm was Inoperable Due to Procedural Deficiency

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT NUMBER (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 11 | 22 | 93 | 93 | -- 014 -- | 00 | 12 | 20 | 93 | | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER 05000 |

| OPERATING MODE (9) | N | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | |
|---|---|---|---|---|---|---|---|
| POWER LEVEL (10) | 88 | 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 |
| | | 20.405(a)(1)(iii) | X | 50.73(a)(2)(i) | | 50.73(a)(2)(viii)(A) | (Specify in Abstract below and in Text, NRC Form 366A) |
| | | 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 (Include Area Code) |
|---|---|
| M. R. Kansler, Station Manager | (804) 357-3184 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|
| YES (If yes, complete EXPECTED SUBMISSION DATE) | X | NO | | | | |


ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

Unit 1 was operating at 88% power on November 22, 1993, when control room personnel noted that the Unit 1 calorimetric data point value generated by the Prodac 250 (P-250) computer system was not changing as expected. Instrumentation and Control Technicians investigated the discrepancy and determined that the P-250's integration and averaging program functions had failed. The P-250 was declared inoperable and Abnormal Procedure 0-AP-20.02 was initiated. The P-250 program failure rendered the "Δ Flux Deviation" alarm inoperable. Technical Specification 3.12.B.4.d requires that delta flux be logged and assessed when this alarm is out of service. Control room personnel did not begin logging delta flux since they were not cognizant of the P-250 program failure. This event was caused by a procedural deficiency. To prevent recurrence, Abnormal Procedure 0-AP-20.02 will be revised to address a partial failure of the P-250, as well as a complete system failure. This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(b) since delta flux was not logged and assessed as required by Technical Specification 3.12.B.4.d.

**REQUIRED NUMBER OF DIGITS/CHARACTERS FOR EACH BLOCK**

| BLOCK NUMBER | NUMBER OF DIGITS/CHARACTERS | TITLE |
|---|---|---|
| 1 | UP TO 46 | FACILITY NAME |
| 2 | 8 TOTAL<br>3 IN ADDITION TO 05000 | DOCKET NUMBER |
| 3 | VARIES | PAGE NUMBER |
| 4 | UP TO 76 | TITLE |
| 5 | 6 TOTAL<br>2 PER BLOCK | EVENT DATE |
| 6 | 7 TOTAL<br>2 FOR YEAR<br>3 FOR SEQUENTIAL NUMBER<br>2 FOR REVISION NUMBER | LER NUMBER |
| 7 | 6 TOTAL<br>2 PER BLOCK | REPORT DATE |
| 8 | UP TO 18 – FACILITY NAME<br><br>8 TOTAL – DOCKET NUMBER<br>3 IN ADDITION TO 05000 | OTHER FACILITIES INVOLVED |
| 9 | 1 | OPERATING MODE |
| 10 | 3 | POWER LEVEL |
| 11 | 1<br>CHECK BOX THAT APPLIES | REQUIREMENTS OF 10 CFR |
| 12 | UP TO 50 FOR NAME<br>14 FOR TELEPHONE | LICENSEE CONTACT |
| 13 | CAUSE VARIES<br>2 FOR SYSTEM<br>4 FOR COMPONENT<br>4 FOR MANUFACTURER<br>NPRDS VARIES | EACH COMPONENT FAILURE |
| 14 | 1<br>CHECK BOX THAT APPLIES | SUPPLEMENTAL REPORT EXPECTED |
| 15 | 6 TOTAL<br>2 PER BLOCK | EXPECTED SUBMISSION DATE |

## 1.0 DESCRIPTION OF THE EVENT

Unit 1 was operating at 88% power on November 22, 1993, in an end of cycle coast down. At 1357 hours, an alarm light {EIIS-ID,ALM} on the reactor operator's Prodac 250 (P-250) computer system console and a message on the alarm printer {EIIS-ID,PRNT} indicated that there was a problem with the P-250. The reactor operator noted no unusual P-250 indications and the computer continued to function as expected during the remainder of the shift. On the following shift, the reactor operator noted at 2133 hours, that the Unit 1 calorimetric data point value generated by the P-250 was not changing, as would be expected during power coast down operation. The operator assessed the P-250 indications and consulted Abnormal Procedure 0-AP-20.02, "Loss of the Prodac-250 Computer". It was determined that the entry conditions for 0-AP-20.02 were not met, since digital and analog trends were functioning as expected and the computer responded to commands entered by the operator.

Instrumentation and Control Technicians investigated the discrepancy on November 23, 1993, and determined that the P-250 computer system integration and averaging program functions had failed on November 22, 1993, at 1357 hours. This condition invalidated the reactor power calorimetric, containment average temperature, and reactor power delta flux calculation results. The P-250 was declared inoperable on November 23, 1993, at 1030 hours, and Abnormal Procedure 0-AP-20.02 was initiated.

The P-250 computer system delta flux alarm program calculates delta flux utilizing the voltage values from each set of excore nuclear instrumentation detectors. Output from this program causes control room annunciator, "Δ Flux Deviation", to alarm when the calculated delta flux value is outside of the target delta flux band. When the P-250 program failed, the calculated value for reactor power delta flux remained constant, rendering the "Δ Flux Deviation" alarm {EIIS-IB,ALM} inoperable. When this alarm is out of service, Technical Specification 3.12.B.4.d requires that axial flux difference (i.e., delta flux) be logged and assessed every hour for the first 24 hours (every one-half hour thereafter) for conformance to the limits. Control room personnel did not begin logging delta flux until November 23, 1993, at 1030 hours, since they were not cognizant of the P-250 program failure.

## 1.0 DESCRIPTION OF THE EVENT (Continued)

The reactor power calorimetric and containment average temperature were monitored by alternate means and therefore, did not impact Technical Specification compliance. The Technical Specification (Table 4.1-1) surveillance requirement for nuclear power range instrument channels was satisfied through the performance (before and after the event) of Operations Periodic Test procedure 1-OPT-RX-001, "Reactor Power Calorimetric Using CALCALC Computer Program". The Technical Specification (Figure 3.8-1) requirement for minimum containment average temperature was verified through the performance of Operations Periodic Test procedure 1-PT-36, "Instrument Surveillance".

This event is being reported pursuant to 10 CFR 50.73(a)(2)(i)(b) since delta flux was not logged and assessed as required by Technical Specification 3.12.B.4.d.

## 2.0 SAFETY CONSEQUENCES AND IMPLICATIONS

This event resulted in no safety consequences or implications. The P-250 computer system was designed to provide information to assist control room operators in the operation of the unit. The control room control boards provide sufficient information to enable safe and proper operation of the unit when the P-250 is out of service.

During this event, delta flux was continuously indicated on control room power range delta flux meters {EIIS-IG,MTR} and was recorded by the control room neutron flux recorder {EIIS-IG,JR}. The indicated and recorded delta flux values were derived from the nuclear power range instrumentation and were not affected by the P-250 program failure. A review of the neutron flux recorder strip charts indicated that delta flux did not deviate from acceptable limits during the period in which the P-250 integration and averaging program functions were inoperable. Therefore, the health and safety of the public were not affected.

## 3.0 CAUSE

This event was caused by a procedural deficiency in that a procedure for identifying and responding to a partial failure of the P-250 computer system did not exist. This problem was exacerbated in that the affected P-250 parameter values remained constant following the program failure and continued to indicate as expected. These circumstances impeded control room personnel's recognition of the P-250 program failure.

The loss of the P-250 computer system integration and averaging program functions was caused by a failure of a sector on the computer's fixed disk storage device.

## 4.0 IMMEDIATE CORRECTIVE ACTION(S)

The P-250 was declared inoperable on November 23, 1993, at 1030 hours, following trouble shooting by I&C personnel. Abnormal Procedure 0-AP-20.02, "Loss of the Prodac-250 Computer", was initiated and provided guidance for complying with Technical Specification 3.12.B.4.d.

## 5.0 ADDITIONAL CORRECTIVE ACTION(S)

Instrumentation and Control Technicians reloaded the affected programs onto the P-250 computer. The P-250 was returned to service on November 23, 1993, at 1145 hours.

Operations Periodic Test procedure 1-OPT-RX-001, "Reactor Power Calorimetric Using CALCALC Computer Program", was performed during the period in which the P-250 integration and averaging program functions were inoperable. Therefore, the results of the test were considered invalid and were retracted. Compliance with Technical Specification surveillance requirements for the nuclear power range instrument channels was not affected however, since 1-OPT-RX-001 was satisfactorily performed before and after the event.

## 6.0 ACTIONS TO PREVENT RECURRENCE

Operations personnel were apprised of this event.

Abnormal Procedure 0-AP-20.02, "Loss of the Prodac-250 Computer", was developed to address a complete failure of the P-250 computer system. This procedure will be revised to provide guidance to control room operators in identifying and responding to a partial failure of the P-250, as well as to a complete system failure. Control room operators will be trained in the use of the revised procedure.

## 7.0 SIMILAR EVENTS

None

## 8.0 MANUFACTURER/MODEL NUMBER

N/A