

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Surry Power Station, Unit 2** DOCKET NUMBER (2) **0 5 0 0 0 2 8 1 1** PAGE (3) **1 OF 1 3**

TITLE (4) **Auto Start of #2 EDG from Loss of E Transfer Bus**

| 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 | 1 | 0 | 2 | 8 | 6 | 8 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 8 | 6 | 0 | 5 | 0 | 0 | 0 |

OPERATING MODE (9) **2**

POWER LEVEL (10) **1 0 0**

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8: (Check one or more of the following) (11)

| | | | |
|--|---|---|--|
| <input type="checkbox"/> 20.402(b) | <input type="checkbox"/> 20.405(c) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | <input type="checkbox"/> 73.71(b) |
| <input type="checkbox"/> 20.405(a)(1)(i) | <input type="checkbox"/> 50.38(c)(1) | <input type="checkbox"/> 50.73(a)(2)(v) | <input type="checkbox"/> 73.71(c) |
| <input type="checkbox"/> 20.405(a)(1)(ii) | <input type="checkbox"/> 50.38(c)(2) | <input type="checkbox"/> 50.73(a)(2)(vii) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| <input type="checkbox"/> 20.405(a)(1)(iii) | <input type="checkbox"/> 50.73(a)(2)(i) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | |
| <input type="checkbox"/> 20.405(a)(1)(iv) | <input type="checkbox"/> 50.73(a)(2)(ii) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) | |
| <input type="checkbox"/> 20.405(a)(1)(v) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)
NAME **R. F. Saunders, Station Manager** TELEPHONE NUMBER **8 0 4 3 5 7 1 3 1 8 4**

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 | |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|---|
| B | E | A | I | N | S | E | 1 | 4 | 8 | Y |

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO
EXPECTED SUBMISSION DATE (15) **0 6 0 1 8 6**

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

On January 2, 1986 at 1458 hours, following an automatic turbine runback, no. 2 emergency diesel generator (no. 2 EDG) started as designed on a loss of "E" transfer bus.

Unit 2 experienced a loss of "E" transfer bus when breaker 15E1 opened on a pilot wire differential lockout from "B" reserve station service transformer. This was initiated due to a failed stress cone connection on feeder breaker "252" which shorted a cable to ground. A preliminary investigation has found improper installation as the probable cause of the stress cone failure.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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| FACILITY NAME (1) Surry Power Station, Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 2 8 1 8 6 | LER NUMBER (8) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | 8 6 | 0 0 1 | 0 0 0 | 2 | OF | 0 3 |

TEXT (If more space is required, use additional NRC Form 388A's) (17)

AUTO START of #2 EDG FROM LOSS of E TRANSFER BUS

1. Event Description

On January 2, 1986 at 1458 hours, unit 2 experienced a loss of E transfer bus when breaker 15E1 opened on a pilot wire differential lockout from "B" reserve station service transformer. This resulted in the following events:

- automatic starting of no. 2 emergency diesel generator (no. 2 EDG).
- isolation of "B" reserve station service transformer.
- tripping of the transfer bus supply and emergency bus 2H.
- initiation of the nuclear instrumentation rod drop turbine runback.

Following the turbine runback, control rods began to move to match turbine and reactor power (Tave to Tref). After control rods moved 2 steps, an urgent failure alarm was received from the rod control logic cabinet, thereby preventing rod movement. Following the transient, the primary plant and the secondary plant were balanced at 88% power via an emergency boration of 150 gallons and turbine loading. The urgent failure in the control rod logic cabinet was reset and rods were then returned to manual control.

2. Safety Consequences and Implications

The emergency buses are normally fed from the reserve station service transformers via the transfer buses. The emergency power system, backup power supply to the emergency buses, consists of three diesel generators for two reactor units. One generator is used exclusively for unit 1, the second for unit 2, and the third generator functions as a backup for either unit 1 or 2. The no. 1 EDG started satisfactorily as designed on a loss of the normal power supply to the emergency bus. With the loss of E transfer bus, one of two required offsite power sources (primary source) was unavailable for approximately 15 1/2 hours. Technical Specifications allow (7) days to return the power supply to service.

Although the control rods could not be manipulated normally, they were capable of being dropped at all times during this event.

An unreviewed safety question was not created during this event and the health and safety of the public were not affected.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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3. Cause

The loss of E transfer bus was caused by a pilot wire differential lockout on "B" reserve station service transformer. This was initiated due to a failed stress cone on phase "C" of feeder breaker "252" shorting the cable to ground. Stress cones, factory molded terminations, are widely used to terminate primary voltage cable to reduce the high electrical stresses at the shielded cable end. A preliminary investigation has found improper installation as the probable cause of the stress cone failure.

The rod drop turbine runback was caused by a momentary loss of power to nuclear instrument (NI-41) which is powered from vital bus 2-I. Vital bus 2-I lost power when the normal supply (emergency bus 2H) momentarily lost power.

4. Immediate Corrective Action

The immediate corrective actions included:

- verifying EDG no. 2 started and the emergency buses energized.
- returning the unit to steady state by adjusting turbine load.

5. Additional Corrective Actions

The urgent failure alarm in the rod logic cabinet was reset and the rods were placed in manual control. Also, proper rod motion was verified.

The cable breaker "252" was spliced and the failed stress cone connection was replaced. Stress cone connections to breaker "252" were tested satisfactorily prior to returning the breaker to service. The stress cone is being examined to determine the cause of failure.

6. Action Taken to Prevent Recurrence

The spurious urgent failure alarm is being investigated and a complete check of the control rod logic cabinet will be performed during the next scheduled outage.

Corrective actions for stress cone connections are pending further investigation.

7. Generic Implications

None.

Vepco

VIRGINIA ELECTRIC AND POWER COMPANY

Surry Power Station
P. O. Box 315
Surry, Virginia 23883

January 31, 1986

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

Serial No: 86-01
Docket No: 50-281
License No: DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Surry Unit 2.

REPORT NUMBER

86-001-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be reviewed by Safety Evaluation and Control.

Very truly yours,

David L. Benson
for

R. F. Saunders
Station Manager

Enclosure

cc: Dr. J. Nelson Grace
Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

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