

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) Surry Power Station, Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 2 8 1 1 | PAGE (3) 1 OF 0 4 |
|--|--|----------------------|

TITLE (4)
LHSI Pump Discharge MOVs 2863A & B Power Supplies Interchanged

| 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) | | | | | | | | | | | | | | | | |
| 1 | 2 | 0 | 8 | 8 | 8 | 8 | 8 | 8 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 9 | 8 | 9 | | | 0 | 5 | 0 | 0 | 0 |

| | | | | | | | | | | | |
|---------------------------|-----------------|--|------------------|-----------------|----------------|----------------------|--|--|--|--|--|
| OPERATING MODE (8) N | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11) | | | | | | | | | |
| POWER LEVEL (10) 0 0 0 | | 20.402(b) | | 20.405(c) | | 50.73(a)(2)(iv) | | 73.71(b) | | | |
| | | 20.405(a)(1)(i) | | 50.38(c)(1) | | 50.73(a)(2)(v) | | 73.71(c) | | | |
| | | 20.405(a)(1)(ii) | | 50.38(c)(2) | | 50.73(a)(2)(vii) | | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | | | |
| | | 20.405(a)(1)(iii) | | 50.73(a)(2)(i) | | 50.73(a)(2)(viii)(A) | | | | | |
| | | 20.405(a)(1)(iv) | X | 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 M. R. Kansler, Station Manager | | | | | | | | TELEPHONE NUMBER | |
| | | | | | | | | AREA CODE | |
| | | | | | | | | 8 0 4 | 3 5 7 - 3 1 8 4 |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | |
|--|--------|-----------|--------------|-------------------|-------|--------|-----------|--------------|-------------------|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NRC |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| | | | | | |
|---|------|-------------------------------|-------|-----|------|
| 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 fifteen single-space typewritten lines) (16)

On December 8, 1988, both Unit 1 and Unit 2 were in Refueling Shutdown (RSD). While investigating a station deviation report, it was determined that the power supplies for two safety injection valve operators were reversed. The "A" Low Head Safety Injection (LHSI) pump discharge valve operator (MOV-SI-2863A) was powered from the "B" train power supply, and the "B" LHSI pump discharge valve operator (MOV-SI-2863B) was powered from the "A" train power supply. This condition violates the train independence criterion. A detailed review of drawings and pertinent documentation was completed and field walkdowns were performed. As a result of these efforts, it was concluded that this error occurred during original plant construction. Inspections of other motor-operated valves (MOV) that are located in parallel flow paths were also performed to verify power train separation. These inspections did not identify any similar conditions and indicated the above arrangement is an isolated occurrence. A detailed report is being prepared by a management significant event review team which will provide corrective action recommendations.

8901130031 890109
PDR ADOCK 05000281
S PNU

IE22
1/1

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

| | | | | | | | |
|--|--|----------------|----------------------|--------------------|----------|------|---|
| FACILITY NAME (1) Surry Power Station, Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 2 8 1 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | 8 8 | — 0 2 5 — | 0 0 | 0 2 | OF 0 | 4 |

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

1.0 Description of the Event

On December 8, 1988, both Unit 1 and Unit 2 were in Refueling Shutdown (RSD). While investigating a station deviation report, it was discovered that the power supplies to two Low Head Safety Injection (LHSI) Pumps' [EIIS-P] discharge valve motor operators [EIIS-MO] were reversed. These valves supply the suctions of the High Head Safety Injection (HHSI) pumps [EIIS-P]. The "A" LHSI pump discharge valve operator (MOV-SI-2863A) was powered from the "B" train power supply, and the "B" LHSI pump discharge valve operator (MOV-SI-2863B) was powered from the "A" train power supply. The above condition violates the train independence criterion.

2.0 Safety Consequences and Implications

Recirculation Mode Transfer (RMT) (EIIS-JE) is the designation given to the circuit which initiates a change from the injection phase, where LHSI pump suction is taken from the Refueling Water Storage Tank (RWST), to a recirculation phase where LHSI pump suction is taken from the Recirculation Spray (RS) sump during a Design Basis Event (DBE). This change automatically occurs when the level in the RWST reaches a specified setpoint. As part of this change, the LHSI pump discharge MOVs to the HHSI pump suctions open, and the RWST supply MOVs to the HHSI pumps close. The HHSI pumps provide low flow rates at a high discharge pressure, primarily to provide protection against small break LOCAs. All three (3) HHSI pumps receive an auto start signal upon SI initiation. One pump is normally locked out. Because of the above wiring discrepancy, a single failure of an emergency power supply could have resulted in a loss of suction to the HHSI pumps through the operable pump's normal flow path.

An alternate supply to the suction of the HHSI pumps was available, however. This flow path is provided by the LHSI pump discharge cross-connect and the operable LHSI pump discharge valve. The valves in the cross-connect are verified open each shift.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

| | | | | | | | |
|--|--|----------------|----------------------|--------------------|----------|---|------------|
| FACILITY NAME (1) Surry Power Station, Unit 2 | DOCKET NUMBER (2) 0 5 0 0 0 2 8 1 8 8 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | | |
| | | 0 | 2 | 5 | 0 | 0 | 0 3 OF 0 4 |

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

Since the LHSI pumps were capable of supplying the suction of the HHSI pumps, the health and safety of the public were not affected.

3.0 Cause

A detailed review of electrical wiring, cable routing, piping schematics, flow diagrams, and piping isometric drawings has been conducted. In addition, plant startup testing, plant modifications, and work histories of MOV-2863A/B were reviewed, and physical system walkdowns were performed. Based upon these reviews and verifications, it was concluded that the error occurred during original construction.

4.0 Immediate Corrective Action(s)

At the time of discovery, Unit 2 was in RSD. The LHSI pump discharge to the HHSI pumps suction was not in use as the Technical Specification 3.2.A required flow path to the core. Therefore, no immediate corrective actions were necessary.

5.0 Additional Corrective Action(s)

An Engineering Work Request (EWR) was written and approved on December 11, 1988 to perform inspections of Unit 1 and Unit 2 MOVs that are located in parallel flow paths which require train separation of power supplies. This EWR and other inspections indicate that the above condition discovered on MOV-2863A & B is an isolated event.

A management significant event review team was formed on December 15, 1988 to investigate this event and to address generic implications. A detailed report based on the team's findings will provide corrective action recommendations.

Finally, an EWR has been written to correct the "as found" discrepant conditions of MOV-2863A & B by rerouting and terminating the cabling to the proper motor operators prior to the startup of Unit 2.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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

TEXT (If more space is required, use additional NRC Form 365A's) (17)

6.0 Actions to Prevent Recurrence

The final report submitted by the management significant event review team will provide corrective action recommendations to prevent recurrence including the following:

- 1) perform enhanced testing of certain Engineered Safety Feature MOVs, and
- 2) perform functional testing of the RMT circuitry and component actuations.

In addition to these recommendations, an Operational Assurance Program has been formed which will review systems and components required to perform a specific function to achieve cold shutdown or mitigate the consequences of an accident. These components and systems will be identified on plant drawings and walked down by knowledgeable personnel in order to:

- 1) verify physical location of the component within the system,
- 2) ensure proper identification of the component,
- 3) ensure proper orientation of the component,
- 4) ensure that discrepancies are identified and addressed, and
- 5) ensure that each component is fed from its proper power source.

7.0 Similar Events

None.

8.0 Manufacturer/Model Number

N/A

VIRGINIA ELECTRIC AND POWER COMPANY
Surry Power Station
P. O. Box 315
Surry, Virginia 23883

January 9, 1989

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

Serial No.: 88-070
Docket No.: 50-281
License No. DPR-37

Gentlemen:

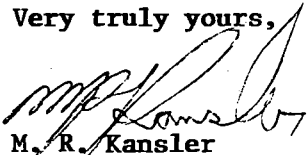
Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Unit 2.

REPORT NUMBER

88-025-00

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,


M. R. Kansler
Station Manager

Enclosure

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

IER2
11