

# Vepco

VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA POWER STATION  
P. O. BOX 402  
MINERAL, VIRGINIA 23117

10 CFR 50.73

January 2, 1991

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

Serial No. N-90-022  
NAPS: RCS/rcs  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

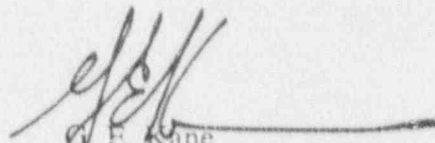
Dear Sirs:

The Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Units 1 and 2.

Report No. 90-012-00

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

Very Truly Yours,

  
G. E. Kane  
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission  
101 Marietta Street, N.W.  
Suite 2900  
Atlanta, Georgia 30323

Mr. M. S. Lesser  
NRC Senior Resident Inspector  
North Anna Power Station

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### LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

|                                      |  |                                   |  |            |  |
|--------------------------------------|--|-----------------------------------|--|------------|--|
| FACILITY NAME (1)                    |  | DOCKET NUMBER (2)                 |  | PAGE (3)   |  |
| NORTH ANNA POWER STATION UNITS 1 & 2 |  | 0   5   0   0   0   3   3   8   1 |  | 1 OF 0   3 |  |

TITLE (4)  
SERVICE WATER SYSTEM OPERATED IN AN UNANALYZED CONDITION CAUSING POSSIBLE LOW FLOW TO RECIRCULATING SPRAY HEAT EXCHANGERS 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                |  |  |
| 1              | 2   | 0    | 4              | 9                 | 0               | 9               | 0   | 0    | NORTH ANNA UNIT 2             |  |  |
| 0              | 1   | 2    | 0              | 0                 | 0               | 0               | 1   | 0    | DOCKET NUMBER(S):             |  |  |
| 0              | 5   | 0    | 0              | 0                 | 0               | 0               | 3   | 3    | 0   5   0   0   0   3   3   9 |  |  |
| 0              | 5   | 0    | 0              | 0                 | 0               | 0               | 0   | 0    | 0   5   0   0   0             |  |  |

OPERATING MODE (9) 1

POWER LEVEL (10) 0 | 5 | 9

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)

|                   |                  |                      |  |
|-------------------|------------------|----------------------|--|
| 20.402(b)         | 20.405(c)        | 60.73(a)(2)(iv)      | 73.71(b)   |
| 20.405(a)(1)(ii)  | 60.36(c)(1)      | 60.73(a)(2)(v)       | 73.71(c)   |
| 20.405(a)(1)(iii) | 60.36(c)(2)      | 60.73(a)(2)(vii)     | OTHER (Specify in Abstract below and in Text, NRC Form 366A) |
| 20.405(a)(1)(iii) | 60.73(a)(2)(ii)  | 60.73(a)(2)(viii)(A) |  |
| 20.405(a)(1)(iv)  | 60.73(a)(2)(ii)  | 60.73(a)(2)(viii)(B) |  |
| 20.405(a)(1)(v)   | 60.73(a)(2)(iii) | 60.73(a)(2)(ix)      |  |

LICENSEE CONTACT FOR THIS LER (12)

|                             |  |
|-----------------------------|--|
| NAME                        | TELEPHONE NUMBER                                     |
| G. E. Kane, Station Manager | AREA CODE: 7   0   3   8   9   4   -   2   1   0   1 |

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

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

|       |     |      |
|-------|-----|------|
| MONTH | DAY | YEAR |
|       |     |      |

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

At 1500 hours on December 4, 1990 with Unit 1 operating at 58.5 percent power in Mode 1 (Power Operation) and Unit 2 operating at 100 percent power in Mode 1 (Power Operation), it was discovered that a remote potential existed for operation of the shared Service Water (SW) System in an unanalyzed condition. This discovery was made during a review of the SW system concerning the relationship between the operability of the Emergency Diesel Generators (EDG) on one unit and the operability of the SW Pumps on the opposite unit. A four hour report was made at 1610 hours on December 4, 1990 pursuant to 10CFR50.72(b)(2)(iii)(D). This event is reportable pursuant to 10CFR50.73(a)(2)(v)(D).

The condition was caused by personnel error in that administrative controls have not addressed SW operability requirements for the condition of one unit shutdown and one unit operating. Technical Specifications do not cover SW operation in Modes 5 (Cold Shutdown) and 6 (Refueling). Restrictions correcting the condition were placed on the operation of the SW system by a Standing Order which was issued November 30, 1990 and further clarified in a revision December 7, 1990. Applicable procedures will be revised to incorporate the information contained in the standing order. Based on past SW Pump flow data and on probabilistic analysis of the scenario possibly resulting from the condition, the health and safety of the public have not been affected at any time during this condition.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

|                                      |                   |                |                   |                 |          |    |     |
|--------------------------------------|-------------------|----------------|-------------------|-----------------|----------|----|-----|
| FACILITY NAME (1)                    | DOCKET NUMBER (2) | LER NUMBER (6) |                   |                 | PAGE (3) |    |     |
|                                      |                   | YEAR           | SEQUENTIAL NUMBER | REVISION NUMBER |          |    |     |
| NORTH ANNA POWER STATION UNITS 1 & 2 | 0 5 0 0 0 3 3 8   | 9 0            | 0 1 2             | 0 0             | 0 2      | OF | 0 3 |

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

### 1.0 Description of the Event

At 1500 hours on December 4, 1990 with Unit 1 operating at 58.5 percent power in Mode 1 (Power Operation) and Unit 2 operating at 100 percent power in Mode 1 (Power Operation), it was discovered that a remote potential existed for operation of the shared Service Water (SW) (EIS System Identifier BS for Ultimate Heat Sink System) System in an unanalyzed condition. This discovery was made during a review of the SW system concerning the relationship between the operability of the Emergency Diesel Generators (EDG) (EIS System Identifier EK for Emergency Onsite Power Supply System, Component Identifier DG for Diesel Generator) on one unit and the operability of the SW Pumps (EIS System Identifier BS for Ultimate Heat Sink System, Component Identifier P for Pump) on the opposite unit.

A four hour report was made at 1610 hours on December 4, 1990 pursuant to 10CFR50.72(b)(2)(iii)(D) for a condition which alone could have prevented the fulfillment of the safety function of a system needed to mitigate the consequences of an accident. This event is reportable pursuant to 10CFR50.73(a)(2)(v)(D).

If a Design Basis Accident (DBA) were to occur on one unit while it was in Modes 1 through 4 with a loss of offsite power, a Containment Depressurization Actuation (CDA) would be initiated. If, in addition, the other unit were in Mode 5 or 6 and had one of its EDG's out of service, as permitted by TS, a subsequent failure of one EDG on the DBA unit could result in only two out of four SW Pumps running. If the SW system is aligned in an unthrottled condition through two Component Cooling (CC) Heat Exchangers (HX) (EIS System Identifier CC for Closed or Component Cooling Water System, Component Identifier HX for Heat Exchanger) on the non-accident unit, the DBA unit Recirculating Spray (RS) HX's (EIS System Identifier BE for Containment Spray System, Component Identifier HX for Heat Exchanger) would not receive design flows.

During past refueling outages, an EDG of a unit in cold shutdown has been taken out of service for overhaul maintenance without the shared SW System having been throttled to ensure DBA flow to the RSHX's of the operating unit. Although this condition is permitted by TS, administrative controls were insufficient to specify emergency power source requirements for the SW Pumps on the cold shutdown unit which would ensure operability of the operating unit's RS System.

### 2.0 Significant Safety Consequences and Implications

Analysis of past SW Pump flow data has led to the conclusion that SW Pump runout under these conditions is not expected.

For insufficient flow to the RSHX's to occur, the DBA unit EDG which fails must first start, provide power to open the isolation valves separating SW to the EDG's train of RSHX, and then fail. This is not a typically considered sequence for analysis of a CDA with loss of offsite power. Analysis of this scenario has led to the conclusion that the probability of events occurring in this manner is extremely low. Thus, inadequate flow to the RSHX's is an extremely low probability event.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

|                                      |                               |                |                   |                 |          |          |
|--------------------------------------|-------------------------------|----------------|-------------------|-----------------|----------|----------|
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| NORTH ANNA POWER STATION UNITS 1 & 2 | 0   5   0   0   0   3   3   8 | 9   0          | —   0   1   2     | —   0   0       | 0   3    | OF 0   3 |

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

2.0 Significant Safety Consequences and Implications (Continued)

Specific calculations assuming conservatively low flows to the RSHX's indicate that the 10CFR100 and GDC19 criteria would still be met.

Based on SW Pump data and probabilistic analysis of the scenario, the health and safety of the public have not been affected at any time during this condition.

3.0 Cause of the Event

The condition was caused by personnel error in that administrative controls have not addressed SW operability requirements for the condition of one unit shutdown and one unit operating. The Modes of applicability for TS 3.7.4.1, which covers SW operability, are Modes 1 through 4. There is no TS which covers SW operability in Modes 5 and 6. Thus, administrative controls have been insufficient to ensure emergency power sources to the SW Pumps of a unit in Mode 5 (Cold Shutdown) or 6 (Refueling) even though TS were complied with at all times.

4.0 Immediate Corrective Actions

Standing Order 177, Service Water System Controls, was issued November 30, 1990 and further clarified in a revision issued December 7, 1990. It places new administrative controls on the operation of the SW system in order to prevent recurrence of this condition.

5.0 Additional Corrective Actions

As an action required to clear Standing Order 177 (Revision 1), applicable Station operations procedures will be revised to incorporate the information and administrative controls contained in the standing order.

6.0 Actions to Prevent Recurrence

A TS change in the form of an amendment will be evaluated for Units 1 and 2 to cover SW system operability requirements in Modes 5 and 6.

Furthermore, the Merits TS submittal for Units 1 and 2 will be revised as appropriate to cover SW system operability requirements in Modes 5 and 6.

7.0 Similar Events

Licensee Event Report (LER) 88-024-00, submitted for Units 1 and 2 November 15, 1988, documents SW flow not within Updated Final Safety Analysis Report (UFSAR) assumptions.

LER 89-008-00, submitted for Unit 1 May 12, 1989 and revised as LER 89-008-01 on June 23, 1989, documents SW flow to the RSHX's as less than design.