

# Vepco

VIRGINIA ELECTRIC AND POWER COMPANY

NORTH ANNA POWER STATION

P. O. BOX 402

MINERAL, VIRGINIA 23117

10 CFR 50.73

March 24, 1992

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

Serial No. N-92-08  
NAPS:WCI  
Docket Nos. 50-338  
License Nos. NPF-4

Dear Sirs:

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

Report No. 50-338/92-006-00

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: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-535), 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)

North Anna Power Station Unit 1

DOCKET NUMBER (2)

050003381 OF 03

PAGE (3)

TITLE (4)

MANUAL REACTOR TRIP DURING STARTUP WHEN FOUR RODS DROPPED INTO THE CORE

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	3	0	5	9	2	9	2	0	0	6	0	0	0	3	2	4	9	2		050003381
OPERATING MODE (9)		3		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6. (Check one or more of the following) (11)																
POWER LEVEL (10)		000		20.402(b)		20.405(a)		<input checked="" type="checkbox"/> 50.73(a)(2)(iv)		73.71(b)										
				20.405(a)(1)(i)		50.73(a)(1)		<input type="checkbox"/> 50.73(a)(2)(v)		73.71(c)										
				20.405(a)(1)(ii)		50.73(a)(2)		<input type="checkbox"/> 50.73(a)(2)(vi)		OTHER (Specify in Abstract)										
				20.405(a)(1)(iii)		50.73(a)(2)(i)		<input type="checkbox"/> 50.73(a)(2)(vii)(A)		None and in Form NRC Form 365a										
				20.405(a)(1)(iv)		50.73(a)(2)(ii)		<input type="checkbox"/> 50.73(a)(2)(vii)(B)												
				20.405(a)(1)(v)		50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)												

LICENSEE CONTACT FOR THIS LER (12)

NAME

G. E. Kane, Station Manager

TELEPHONE NUMBER

AREA CODE

703894-2101

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										
X	A	A	E	C	P	D	W	1	2	0	Y								

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input type="checkbox"/>	<input checked="" type="checkbox"/>				

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

On March 5, 1992, during the performance of a Unit 1 startup, a manual reactor trip was initiated when operators in the control room observed that Group 2 of Control Bank "B" dropped into the core from 80 steps. The reactor trip breakers were manually opened in accordance with the appropriate Abnormal Procedure (AP-1.2) due to more than one control rod being dropped. All other control rods properly inserted upon the manual trip. This event is reportable pursuant to 10CFR50.73 (a)(2)(iv), and a four hour report was made in accordance with 10CFR50.72 (b)(2)(ii).

The probable cause of the event was failure of a Control Rod Drive Mechanism (CRDM) firing card. The card was subjected to aging due to excessive heat in the power cabinet. Upon visual inspection of the card, circumferential cracks in the soldering joints were noted.

This event posed no significant safety implications because the four control rods fully inserted into the subcritical reactor to a safe position upon failure of the CRDM firing card. In addition, the Reactor Protection System responded as designed upon the manual reactor trip. Therefore, the health and safety of the public was not affected at any time during this event.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 90.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-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.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

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North Anna Power Station Unit 1

YEAR

SEQUENTIAL  
NUMBERREVISION  
NUMBER

0500033892--006--0002 OF 03

TEXT (if more space is required, use additional NRC Form 308A's) (17)

1.0 Description of the Event

On March 5, 1992, during the performance of a Unit 1 startup, a manual reactor trip was initiated when operators in the control room observed that Group 2 of Control Bank 'B' dropped into the core from 80 steps. The reactor trip breakers were manually opened in accordance with the appropriate Abnormal Procedure (AP-1.2) due to more than one control rod being dropped. All other control rods properly inserted upon the manual trip.

Technicians replaced the associated Control Rod Drive Mechanism (CRDM) (EIS System Identifier AA), firing card (Component Identifier ECBD, Vendor W120), and another reactor start-up commenced following management review of the corrective action performed. At 0611 hours on March 5, 1992, reactor criticality was successfully achieved. This event is reportable pursuant to 10CFR50.73 (a)(2)(iv), and a four hour report was made in accordance with 10CFR50.72 (b)(2)(ii).

2.0 Significant Safety Implications

This event posed no significant safety implications because the four control rods fully inserted into the subcritical reactor to a safe position upon failure of the CRDM firing card. In addition, the Reactor Protection System (EIS System Identifier JE) responded as designed upon the manual reactor trip. Therefore, the health and safety of the public was not affected at any time during this event.

3.0 Cause of the Event

The probable cause of the event was failure of a CRDM firing card. Upon inspection of the card, circumferential cracks in the soldering joints were identified. When heat is applied to these cracks, they can expand and cause the card to fail. It is believed that these cracks were caused by excessive heat in the power cabinet.

Due to recurring problems with temperature control in the control rod drive rooms and cable vaults at North Anna, new air conditioning systems were installed for both units during 1991 under DCP-90-14. In addition, undersized pressurizer heater cables were replaced with the appropriate size to reduce heat generation in the Unit 1 cable vaults. A similar replacement is currently being performed for Unit 2. These actions have corrected the overheating problem in the cable vaults and control rod drive rooms.

4.0 Immediate Corrective Actions

The reactor trip breakers were manually opened in accordance with the appropriate Abnormal Procedure (AP-1.2) due to more than one control rod being dropped.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION, REQUEST: 550 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (3)

PAGE (3)

North Anna Power Station Unit 1

YEAR

SEQUENTIAL  
NUMBERREVISION  
NUMBER

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

5.0 Additional Corrective Actions

The subject firing card was removed and visually inspected. Since cracks in the soldering joints were identified, the cards in the Unit 2 CRDM power cabinet are being inspected for similar indications. The remaining Unit 1 cards cannot be inspected at this time since the unit is in operation; however, they will be inspected during the next outage of sufficient duration.

6.0 Action Required to Prevent Recurrence

During the next Unit 1 shutdown of sufficient duration, the Unit 1 CRDM firing cards will be visually inspected. Cards showing indications of excessive heat exposure will be repaired or replaced as required. Based on the results of this inspection, a Preventative Maintenance program may be developed to routinely inspect the subject cards.

7.0 Similar Events

LER N1-84-026-01 documents a reactor trip from 100% power due to a failed firing card in the rod control system resulting in four rods being dropped. The dropped control rods resulted in a negative flux rate reactor trip. Westinghouse was consulted, and it was determined that the event was an isolated failure.

LER N1-85-017-01 documents a manual reactor trip from 16% power when control bank D group 1 dropped into the core. The cause of the dropped control rods was determined to be an intermittent fault in the alarm circuit associated with Power Cabinet 1BD.

8.0 Additional Information

North Anna Unit 2 was in Mode 5 during this incident and was not affected.