

Vepco

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

10 CFR 50.73

May 14, 1993

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

NAPS:MPW
Docket No. 50-339
License No. NPF-7

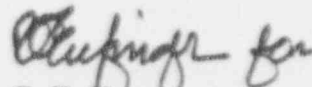
Dear Sirs:

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

Report No. 50-339/93-002-00

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. D. R. Taylor
NRC Resident Inspector
North Anna Power Station

180071
9305190337 930514
PDR ADDCK 05000339
S PDR

LEP
11

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-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) North Anna Power Station Unit 2										DOCKET NUMBER (2) 05000339				PAGE (3) 1 OF 03	
TITLE (4) AUTOMATIC REACTOR TRIP INITIATED FROM A TURBINE TRIP DUE TO AN OVER EXCITATION OF THE MAIN GENERATOR															
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	4	16	93	002	00	0	5	14					05000339		
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 6. (Check one or more of the following) (11)													
1		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				79.71(b)	
POWER LEVEL (10)		20.405(a)(1)(i)				50.36(c)(1)				<input checked="" type="checkbox"/> 50.73(a)(2)(v)				79.71(c)	
100		20.405(a)(1)(ii)				50.36(c)(2)				<input type="checkbox"/> 50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text NRC Form 366A)	
		20.405(a)(1)(iii)				50.73(a)(2)(i)				<input type="checkbox"/> 50.73(a)(2)(vii)(A)					
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				<input type="checkbox"/> 50.73(a)(2)(viii)(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										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	TBRG		W120	Y		X	SJR	V	C710	Y					
X	JDCHA		W120	Y		X	SJIL		G080	N					
SUPPLEMENTAL REPORT EXPECTED (14)															
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO		EXPECTED SUBMISSION DATE (15)		MONTH DAY YEAR	
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)															
<p>On April 16, 1993, at 0717 hours with Unit 2 in Mode 1, 100 percent power, an automatic reactor trip occurred as a result of a turbine trip. Emergency procedures were entered and immediate actions were performed. Subsequently, the operating crew became concerned with the reactor coolant system (RCS) cooldown when temperature decreased to approximately 540 degrees F. To reduce the Steam Generator feedwater addition rate and stabilize the RCS temperature the ATWS Mitigation System Actuation Circuitry was reset and the Auxiliary Feed Water (AFW) pumps were secured before steam generator levels were restored above the automatic start setpoint. Defeating the automatic start capability of the AFW pumps is prohibited by Technical Specifications. A 4 hour report was made to the NRC at 1055 hours pursuant to 10CFR50.72 (b)(2)(ii) & (iii)(A). The event is reportable as an Engineered Safety Feature System actuation pursuant to 10CFR50.73 (a)(2)(iv) & (v).</p> <p>The cause of the turbine trip/reactor trip was a malfunction in the main generator voltage regulator circuitry. The cause of defeating the AFW system during the event was a result of personnel error.</p> <p>No significant safety consequences resulted from the reactor trip because reactor protection safety systems responded as designed. Disabling the AFW pumps did not present a significant safety consequence because the heat sink was maintained throughout the event. Therefore, the health and safety of the public were not affected at any time during this event.</p>															

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTED: REQUEST: 50.0 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)

PAGE (3)

North Anna Power Station
Unit 2

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

05000339 93 - 002 - 00 02 OF 03

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

1.0 Description of the Event

On April 16, 1993, at 0717 hours with Unit 2 in Mode 1, 100 percent power, an automatic reactor trip occurred from a turbine trip due to a malfunction in the main generator voltage regulator circuitry (EIIS System TB, Component TG). Emergency procedures were entered and immediate actions were performed. The Auxiliary Feedwater Pumps (AFW) (EIIS System BA, Component P) automatically started on Lo Lo Steam Generator (SG) (EIIS System AB, Component SG) level. During subsequent recovery actions of the reactor trip response procedure it was noted that the reactor coolant system (RCS) was experiencing a cooldown due to feeding the SGs with relatively cold water from the AFW system. The operating crew became concerned with the RCS (EIIS System AB) cooldown rate when temperature decreased to approximately 540 degrees F. To reduce the SG feedwater (EIIS System SJ) addition rate and stabilize the RCS temperature, the ATWS Mitigation System Actuation Circuitry (EIIS System JC) was reset, and the AFW pumps were secured in a manner that rendered them inoperable before SG levels were restored above the automatic start setpoint.

After securing the AFW, Main Feed Water (MFW) was the makeup water source for the SGs. Subsequently, approximately 19 minutes later, the emergency procedure reader noticed that the AFW pump status did not conform to the appropriate emergency procedure step and immediately notified the Shift Supervisor (SS) who directed the pumps to be returned to AUTO. Defeating the automatic start capability of the AFW pumps is prohibited by Technical Specifications. A 4 hour report was made to the NRC at 1055 hours pursuant to 10CFR50.72 (b)(2)(ii) & (iii)(A). The event is reportable as an Engineered Safety Feature System actuation pursuant to 10CFR50.73 (a)(2)(iv) & (v).

2.0 Significant Safety Consequences and Implications

No significant safety consequences resulted from the reactor trip because reactor protection safety systems responded as designed. No significant safety consequences resulted from disabling the AFW pumps for approximately 19 minutes because the heat sink was maintained throughout the event. The AFW pumps could have been made available immediately by manual operator action. The AFW system was always under the cognizance of Licensed Operator. Main feedwater was also available throughout the event and used to provide makeup to the SGs. Therefore, the health and safety of the public were not affected at any time during this event.

3.0 Cause of the Event

The cause of the turbine trip/reactor trip was the result of a malfunction in the main generator voltage regulator circuitry.

The cause of defeating the AFW system was personnel error. Insufficient command and control of the unit trip response and inadequate communications between the operations crew members resulted in defeating the AFW pump, when a valid start signal was present.

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 (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)

PAGE (3)

North Anna Power Station
Unit 2

YEAR

SEQUENTIAL
NUMBERREVISION
NUMBER

05000339 93 - 002 - 00 03 OF 03

TEXT (If more space is required, use additional NRC Form 356A's) (17)

3.0 Cause of the Event (continued)

The policy associated with defeating equipment or system automatic safety functions was misunderstood. In addition, management expectation of communications and problem solving using all crew members was not effectively conveyed.

4.0 Immediate Corrective Actions

Following the reactor trip Emergency Procedure 2-E-0, Reactor Trip or Safety Injection, was entered and the immediate actions performed. The Shift Supervisor immediately directed that the AFW pumps be returned to the automatic position when the condition was identified.

5.0 Additional Corrective Actions

The individuals involved with the AFW pump condition were coached on the station's policy for defeating equipment automatic functions. These individuals were removed from licensed duties and received remediated training designed to enhance their control room communication skills and their understanding of the control room command and control structure during emergency procedure implementation.

6.0 Actions to Prevent Recurrence

Requirements are in place to ensure the event is discussed in the Licensed Operator Requalification Program. A root cause was performed and corrective actions are being reviewed by management for implementation as appropriate. The training reviews and the actions taken regarding the individuals involved are sufficient to preclude recurrence.

7.0 Similar Events

LER N2-86-008-00 identified a reactor trip from a turbine trip as a result actuation of a main generator differential lockout relay upon loss of an excitation field signal. The signal was caused by failure of the permanent magnet generator in the main generator excitation system.

8.0 Additional Information

Component failures resulting from the automatic reactor trip included: Source Range Channel N31 failed low, 1A Feedwater Heater relief valve lifted and would not reset until the feedwater heater was isolated and depressurized, and the "B" MFW Pump breaker indicating lights did not work in the Control Room.

Corrective actions included replacement of the Source Range Channel detector, 1A Feedwater Heater relief valve, and the "B" MFW Pump breaker lights.

Unit 1 was in Mode 3, hot standby, returning to power operations following a refueling outage and was not affected by the event.