Virginia Electric and Power Company North Anna Power Station P. O. Box 402 Mineral, Virginia 23117

August 16, 2010

Attention: Document Control Desk U. S. Nuclear Regulatory Commission

Washington, DC 20555-0001

Serial No.:

10-454

NAPS:

MPW

Docket No.: 50-339

License No.: NPF-7

Dear Sirs:

Pursuant to 10CFR50.73, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Power Station Unit 2.

Report No. 50-339/2010-004-00

This report has been reviewed by the Facility Safety Review Committee and will be forwarded to the Management Safety Review Committee for its review.

Sincerely,

N. Larry Lane

Site Vice President

North Anna Power Station

Enclosure

Commitments contained in this letter: None

cc: United States Nuclear Regulatory Commission

Region II

Marquis One Tower

245 Peachtree Center Ave., NE, Suite 1200

Atlanta, Georgia 30303-1257

NRC Senior Resident Inspector North Anna Power Station

NRC FORM 366 U.S. NUCLEAR REGULATORY COM				IMISSION	8/39/28	DYED BY OMB	NO. 3150-0104		EXPIRES:							
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NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

1.0 DESCRIPTION OF THE EVENT

On June 16, 2010 at 1920, during a thunderstorm, Unit 2 reactor tripped from 98% power on Overtemperature Delta Temperature (OTΔT) (EIIS System JC) due to spiking on two protection channels (EIIS Component CHA). This thunderstorm generated lightning which apparently struck one or more buildings(EIIS Component BLDG) in the Protected Area (PA). Three wide range Reactor Coolant System (RCS) temperature indications (EIIS Sys AB, Component TI) failed and components in the Auxiliary Monitoring Panel in the Fuel Building were damaged. The lightning surge spiked the Unit 2 OTΔT Protection Channels I and II circuitry causing Unit 2 to trip. The reactor trip initiated a turbine trip. The control room team responded to the reactor trip in accordance with procedure 2-E-0, Reactor Trip or Safety injection. All Engineered Safety Feature (EIIS System-JE) equipment responded as designed. The post trip response progressed smoothly and within five minutes the Operations crew transitioned to 2-ES-0.1, Reactor Trip without Safety Injection.

The Unit 2 reactor tripped on OT∆T due to voltage transients that corrupted signals on two protection channels. A combination of station ground degradation and instrument shielding anomalies contributed to lightning-induced transients propagating to Unit 2 channels I and II protection racks. Existing Appendix "R" instrument wiring configuration provided a common point for introduction of transient energy into the protection cabinets.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event posed no significant safety implications since the reactor protection functioned to trip the reactor. All Engineered Safety Feature equipment responded as designed. Therefore, the health and safety of the public were not affected by this event.

A non-emergency 4-hour report was made to the NRC Operations Center at 2108 hours on June 16, 2010, in accordance with 10 CFR 50.72 (b)(2)(iv)(B). During this call an 8-hour report was also made in accordance with 10 CFR 50.72(b)(3)(iv)(A) due to actuation of the Auxiliary Feedwater System (EIIS System-BA). This event is reportable pursuant to 10 CFR 50.73 (a)(2)(iv)(A) for a condition that resulted in automatic actuation of the reactor protection system and the AFW system

3.0 CAUSE

The cause of this event was a lightning strike within the PA. The lightning strike induced a voltage transient of sufficient magnitude on the Channel I and II Overtemperature Delta Temperature ($OT\Delta T$) protection circuits to cause actuation of the Reactor Protection System which resulted in the Unit 2 reactor trip.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

The Control Room team responded to the reactor trip in accordance with procedure 2-E-0,

LICENSEE EVENT REPORT (LER)

CONTINUATION SHEET

CONTINUATION STILL								
1. FACILITY NAME	2. DOCKET		3. PAGE					
		YEAR	SEQUENTIAL NUMBER	REV NO.				
NORTH ANNA POWER STATION UNIT 2	05000 - 339	2010	004	00	3 OF 4			

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

Reactor Trip or Safety injection. The post trip response progressed smoothly and the Control Room team transitioned to 2-ES-0.1, Reactor Trip without Safety Injection.

5.0 ADDITIONAL CORRECTIVE ACTIONS

A design change has been implemented to install the lag time constants in the ΔT Leg and T_{AVG} Leg of the $\Delta T/T_{AVG}$ Protection System in order to dampen and/or reduce the effects of unwanted transients (e.g., lightning strikes) on the system.

While investigating the cause(s) to the Unit 2 trip, it was discovered that the cable shield for RTD 2-RC-TE-2410A (EIIS Sys AB, Component TE) was electrically grounded at two locations, auxiliary monitoring panels 1-EI-CB-203 and 2-EI-CB-97A. A temporary modification (TM) was implemented to lift the shield lead for 2-RC-TE-2410A, which removed the ground loop and a potential path for induced voltage spikes coupling onto other instrumentation.

During the initial investigation of the Unit 2 trip, it was determined that a potential path for induced voltage spikes on the Narrow Range loop "B" temperature RTD's existed on the cable shield. A TM was implemented to lift the shield leads for 2-RC-TE-2420 and 2-RC-TE-2423 in order to remove a potential path for induced voltage spikes on the Narrow Range loop temperature RTD's associated with this event.

Ground grid resistance testing was performed around Unit 1 and 2 Containments to ascertain any degradation of the ground grid connections. Four deficiencies were identified around the protected zone Unit 2 Containment (EIIS Sys NH, Component BLDG) and the Service Building (EIIS Sys MF, Component BLDG). The deficient connections were reestablished between Unit 1 Containment, Unit 2 Containment, and the Service Building. An Electrical Preventive Maintenance (EPM) procedure is being developed to perform testing of ground grid integrity.

During the TM process two excavations of underground to above ground connections were performed. At one location the conductor was not connected to the building ground and the other location revealed a sub standard connection with a below grade mechanical connector. Both connections were repaired.

6.0 ACTIONS TO PREVENT RECURRENCE

The actions noted above are sufficient to prevent recurrence.

7.0 SIMILAR EVENTS

LER N2-2005-001-00 reported an automatic reactor trip and ESF actuation as a result of a lightning strike within the Protected Area.

NRC FORM 366A

(9-2007)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

CONTINUATION SHEET

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NORTH ANNA POWER STATION UNIT 2	05000 - 339	2010	004	00	4	OF 4	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

8.0 ADDITIONAL INFORMATION

Unit 1 was not affect by this event.