10CFR50.73

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

September 8, 2010

Attention: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Serial No.: 10-451
NAPS: MPW
Docket No.: 50-338
License No.: NPF-4

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 1.

Report No. 50-338/2010-002-00

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

IE22
NRR

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES: 8/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
NORTH ANNA POWER STATION , UNIT 1	05000 338	1 OF 3

4. TITLE
Forced Shutdown due to Un-isolable "C" Steam Generator Surface Sample Line Leakage

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCUMENT NUMBER 05000
07	14	2010	2010	-- 002 --	00	09	08	2010	FACILITY NAME	DOCUMENT NUMBER 05000

9. OPERATING MODE: 1

10. POWER LEVEL: 98%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (*Check all that apply*)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☒ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	VOLUNTARY LER

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (*Include Area Code*)
F. Mladen, Director Station Safety and Licensing	(540) 894-2108

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
A	AB	PSP		Y					

14. SUPPLEMENTAL REPORT EXPECTED
☐ YES (*If yes, complete 15. EXPECTED SUBMISSION DATE*) ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT (*Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines*)

On July 14, 2010, at 1834 hours, North Anna Unit 1 entered the six hour action of Technical Specification (TS) 3.4.4 to be in Mode 3 due to the "C" Reactor Coolant System loop being declared inoperable. Prior to the declaration, a seventy two hour limiting action of Technical Requirements Manual TR 3.4.6.A was entered as a result of a leak discovered on the "C" Steam Generator (SG) sample line that was subsequently determined to be un-isolable. At 1934 hours on July 14, 2010, Operations personnel commenced ramping Unit 1 offline. The six hour limiting action of TS 3.4.4 was cleared at 2354 hours when Unit 1 entered Mode 3. A non-emergency 4-hour report was made to the NRC Operations Center at 1953 hours on July 14, 2010, in accordance with 10 CFR 50.72(b)(2)(i). This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(A) for the completion of a nuclear plant shutdown required by the Technical Specifications. This event posed no significant safety implications since the "C" SG surface sample line leak, of approximately .243 gallons per minute, did not impact the safe operation of the reactor. Therefore, the health and safety of the public were not affected by this event.

1.0 DESCRIPTION OF THE EVENT

On July 14, 2010, at 1834 hours, with North Anna Unit 1 at 98 percent power, Mode 1, an investigation of increased containment sump pumping frequency identified through wall leaks on a sample line from the "C" Steam Generator (SG) upstream of the isolation valve. This insulated pipe is one inch carbon steel, Class 601, ASME Class 2 line. When the piping insulation was removed, two steam plumes were visible upstream and downstream of a pipe support. The affected section of piping is not isolable from the steam generator (EIIS Sys - AB, Component – SG) and an on-line repair was not practical. Since the leak degradation mechanism and continued structural integrity could not be determined per Technical Requirements Manual TR 3.4.6, the "C" SG was declared inoperable. Operations therefore declared the "C" Reactor Coolant System (RCS) (EIIS Sys – AB) loop inoperable and entered the six hour limiting action of Technical Specification (TS) 3.4.4. At 1934 hours on July 14, 2010, Operations personnel commenced ramping Unit 1 offline. The six hour limiting action of TS 3.4.4 was cleared at 2354 hours when Unit 1 entered Mode 3.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

This event posed no significant safety implications since the sample line leak did not impact the safe operation of the reactor. Leakage to the containment sump (EIIS Sys – BP, Component – SUMP) was minimal with an increase from a steady state of approximately .020 gallons per minute (GPM) on July 1, 2010 to a maximum of .263 GPM on July 14, 2010. A rupture of the one inch surface sample line attached to the secondary side of the "C" SG would remain well bounded by current UFSAR analysis and this would not be considered to be a precursor to a more significant event. 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 1953 hours on July 14, 2010, in accordance with 10 CFR 50.72(b)(2)(i). This event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(A) for the completion of a nuclear plant shutdown required by the Technical Specifications.

3.0 CAUSE

The cause is attributed to external corrosion caused by water intrusion under the insulation of carbon steel piping. A vulnerability to this corrosion mechanism exists for carbon steel lines which are insulated but which generally operate at relatively low ambient temperatures. Under these conditions water may become trapped under and in the insulation without the necessary thermal conditions to dry. The potential for this condition is more likely in the vicinity of pipe supports or valves that break the continuity of insulation lagging.

The cause of this condition is that a credible failure mechanism for a passive component

was not recognized in the Single Point Vulnerability (SPV) process and therefore an effective mitigation strategy which would have precluded the failure was not established. The Equipment Reliability (ER) process considered this piping to be passive equipment which is normally exempt from ER classification and excluded from SPV review criteria.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

The failed section of the sample line piping was replaced. An immediate extent of condition review identified similar piping configurations in two inch and smaller connections on Blowdown, Wet Layup, and Sample System piping from all three SGs. Inspections and ultrasonic thickness evaluations were performed on these pipe segments. As a result, the repair for the "C" SG surface sampling line piping was expanded to include approximately eight feet of pipe and a small section of piping was replaced on the "B" SG sample line. Ultrasonic Test (UT) readings indicated the replaced sections of pipe on the "B" SG sample line were above minimum wall but were approaching the minimum wall thickness limit.

5.0 ADDITIONAL CORRECTIVE ACTIONS

Piping systems on both units are being identified and evaluated for susceptibility to similar failures. Equipment Reliability classifications and SPV evaluations will be updated as required, including any necessary mitigation strategies. Currently, there is no indication of leakage in Unit 2. The SPV procedure is being updated to include the credible failure mechanism to ensure that similar piping is properly evaluated in the future.

6.0 ACTIONS TO PREVENT RECURRENCE

The actions noted above are sufficient to prevent recurrence.

7.0 SIMILAR EVENTS

None.

8.0 ADDITIONAL INFORMATION

Unit 2 was operating at 100 percent power, Mode 1, and was not affected by this event.