

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

January 17, 2007

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

Serial No.: 07-0015  
SPS:JSA R0  
Docket No.: 50-280  
License No.: DPR-32

**SURRY POWER STATION UNIT 1**  
**SPECIAL REPORT ON QPT NOT LESS THAN TWO PERCENT FOR TWENTY FOUR**  
**HOURS**

In accordance with Surry Power Station Technical Specifications (TS), Section 3.12.B.7.a, Virginia Electric and Power Company hereby submits the following Special Report for the Quadrant Power Tilt (QPT) not being less than 2% for a 24 hour period. The TS states:

- "7. If, except for operation at THERMAL POWER  $\leq$  50% or for physics and control rod assembly surveillance testing, after a further period of 24 hours, the QUADRANT POWER TILT in Specification 3.12.B.5 is not corrected to less than 2%:
- a. If the design hot channel factors for RATED POWER are not exceeded, an evaluation as to the cause of the discrepancy shall be made and a special report issued to the Nuclear Regulatory Commission."

**Background**

Surry Unit 1 was operating at 100 percent reactor power when Control Bank C Group 2 rod K-08 dropped into the core. The control rod was declared inoperable. No rod movement was being performed at the time of the dropped rod. In accordance with TS requirements, reactor power was reduced to less than 75%. Initial investigation determined that the K-08 stationary load side fuse was open due to a short in the control rod cable or in the control rod drive mechanism (CRDM). An evaluation of the effects on the accident analysis of continued operation at an increased power level was completed. Reactor power was increased to 80% until plans could be completed to shut down the reactor and repair the control rod.

JE22

## Cause

On December 18, 2006 at 1229 hours, Unit 1 control rod K-08 dropped into the core resulting in a 4% drop in reactor power. The initial QPT calculation was 3.18% and following the reduction to less than 75% reactor power, the QPT peaked at 7.0%. Troubleshooting determined that control rod K-08 was not recoverable with the unit at power and, at 2230 hours, an incore flux map was performed that verified the hot channel factors to be within design limits. Due to the significant variation in core xenon concentration and power distribution, rescaling of the nuclear instrumentation (NIs) to eliminate the QPT was not performed. On December 19, 2006 at 1229 hours, the QPT was determined to be 2.01%, resulting in the Unit 1 QPT not being corrected to less than 2% after a period of 24 hours.

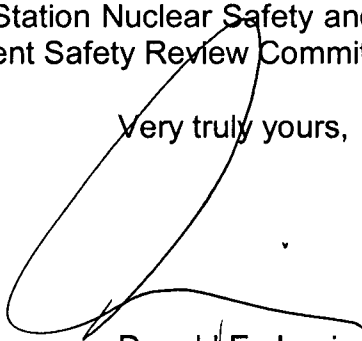
After xenon concentration stabilized, another incore flux map was performed on December 20, 2006 at approximately 0300 hours. Following analysis of this flux map, the NIs were rescaled at approximately 1600 hours to match the current incore power distribution. The QPT was verified to be less than 2% on December 20, 2006 at 1822 hours.

## Actions Taken

Unit 1 was removed from service on January 6, 2007 to repair the K-08 CRDM Head Cable. Repair was completed and Unit 1 returned to power operation on January 7, 2007.

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

Very truly yours,



Donald E. Jernigan,  
Site Vice President  
Surry Power Station

Commitments contained in this letter: None.

cc: United States Nuclear Regulatory Commission  
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Surry Power Station