Virginia Electric and Power Company
Surry Power Station
P. O. Box 315
Surry, Virginia 23883

December 17, 1990

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

Serial No.: 90-780
Docket No.: 50-281
License No.: DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Special Report for Unit 2.

REPORT NUMBER

90-005-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be reviewed by Corporate Nuclear Safety.

Very truly yours,

M. R. Kansler
Station Manager

Enclosure

cc: Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

IE22

NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92
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-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Surry Power Station, Unit 2	0 5 0 0 0 2 8 1	1 OF 0 3

TITLE (4)
Special Report Due to Exceeding 2% Quadrant Power Tilt for Greater Than 24 Hours

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 5 0 0 0
1 1	2 0	9 0	9 0	—	0 0 5	— 0 0	1 2	1 7	9 0		0 5 0 0 0

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 2 8	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	X OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
M. R. Kansler, Station Manager	8 0 4 3 5 7 - 3 1 8 4

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	A A	R O D	W 1 2 0	4							

SUPPLEMENTAL REPORT EXPECTED (14)

	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)				
X NO				

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

At 1711 hours on 11/12/90, while withdrawing control bank 'C' during a reactor startup, Rod Control Cluster Assembly M-12 was declared inoperable due to a mismatch between group and rod position indication. Following troubleshooting, it was determined that Control Rod M-12 could not be withdrawn past the two (2) steps out position. An analysis was performed which determined reactor operation to be acceptable at or below 90% reactor power, provided certain compensatory actions were taken. Surry Technical Specifications allow operation at power with an inoperable control rod. During the subsequent startup, with the reactor at 28% power, a QPT greater than 2% was indicated from 0630 hours on 11/19/90 until 1400 hours on 11/20/90 when the Excore Detectors were recalibrated. This condition was a previously analyzed consequence of reactor operation at power with Control Rod M-12 withdrawn two (2) steps. Results of flux maps to date indicate that Hot Channel Factors are within Technical Specification limits. This event is being reported as a special report pursuant to Technical Specification 3.12.B.7, for a radial tilt in excess of 2% for greater than 24 hours.

1.0 DESCRIPTION OF THE EVENT

At 1656 hours on 11/12/90, a Unit 2 reactor start-up was commenced. At 1711, while withdrawing Control Rod Bank 'C' {EIIS-AA}, the Individual Rod Position Indication (IRPI) {EIIS-ZI} for control rod M-12 stopped at the two (2) steps withdrawn position, and was suspected to be malfunctioning. The control rod withdrawal was halted with the 'C' Control Bank demand at 20 steps to allow testing of the IRPI for Control Rod M-12. After the IRPI was verified to be functioning properly, the Reactor Trip Breakers {EIIS-JC,BKR} were opened, and all control rods, including M-12 dropped into the core.

The M-12 Rod Control Cluster Assembly {EIIS-ROD} was declared inoperable at 1740 hours on 11/12/90, and the unit maintained at Hot Shutdown while troubleshooting efforts were conducted. Following these efforts, it was concluded that Control Rod M-12 could not be physically withdrawn past the two (2) steps out position. The Surry Technical Specifications allow unit power operation with no more than one (1) inoperable control rod, provided compensatory actions are taken. Operation with Control Rod M-12 fully inserted was analyzed and determined to be acceptable following implementation of certain operational restrictions. New core physics curves for operation were generated, affected procedures were revised, and the High Flux Trip and Alarm setpoints were reduced to ensure that the Unit 2 operations would remain within Technical Specifications limits.

At 0140 hours on 11/17/90, with compensatory actions taken, a reactor start-up was commenced. When 'C' Control Bank reached the five (5) step position, as determined by the Rod Bank step counters {EIIS-CTR}, the lift coil disconnect switch {EIIS-DISC} for Control Rod M-12 was opened to prevent further movement of the rod. This action was taken in accordance with Westinghouse recommendations. The reactor achieved criticality at 1510 hours on 11/17/90. At 2239 hours on 11/17/90, Unit 2 Generator Output Circuit Breakers {EIIS-TB,BKR} were closed placing the unit on-line. The unit was ramped to approximately 28% power where initial flux mapping was performed. Flux mapping was completed at 0440 hours on 11/18/90 and indicated that the Hot Channel Factors (HCFs) were within the Technical Specification limits. During the startup a QPT greater than 2% was indicated from 0630 hours on 11/19/90 until 1400 hours on 11/20/90 when the Excore Detectors {EIIS-IA} were recalibrated. This condition had been predicted by a previously completed analysis for reactor operation at power with control rod M-12 positioned two (2) steps from the bottom of the core. This event is being reported as a special report pursuant to Technical Specification 3.12.B.7, for a radial tilt in excess of 2% for greater than 24 hours.

2.0 SAFETY CONSEQUENCES AND IMPLICATIONS

An analysis was performed prior to reactor startup which verified operation with Control Rod M-12 fully inserted was acceptable, provided certain operational restrictions were implemented. The analysis and recommended operational restrictions were reviewed and approved by the Station Nuclear Safety Operating Committee.

New core physics curves for operation were generated, affected procedures were revised, and the High Flux Trip and Alarm setpoints were reduced prior to Unit 2 startup. Reactor operation was in accordance with bounds imposed by analyses. Therefore, an unreviewed safety question was not created, and the health and safety of the public were not affected.

3.0 CAUSE OF THE EVENT

The cause of QPT being in excess of Technical Specification limits was reactor operation at power with control rod M-12 positioned two (2) steps from the bottom of the core.

4.0 IMMEDIATE CORRECTIVE ACTIONS

No immediate corrective actions were required as operating conditions were within the bounds of the safety analysis.

5.0 ADDITIONAL CORRECTIVE ACTIONS

QPT is being monitored and flux mapping performed as required by Technical Specifications.

6.0 ACTIONS TAKEN TO PREVENT RECURRENCE

During the upcoming April, 1991 Unit 2 refueling outage, the failure mechanism of the Rod Control Cluster Assembly will be determined and corrective action taken to restore the control rod location M-12 to service.

7.0 SIMILAR EVENTS

LER 280-84-017; QPT exceeded 2% for greater than 24 hours due to Control Rod B-6 becoming stuck at 56 steps due to Primary Water Stress Corrosion cracking of a Fuel Assembly Hold Down Spring Clamp.

LER 280-86-026; QPT exceeded 2% for greater than 24 hours due to dropping of Control Rod P-6 due to a failed Stationary Gripper Coil.

8.0 MANUFACTURER/MODEL NUMBER

Westinghouse Rod Control Cluster Assembly/R96