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

April 5, 1991

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

Serial No.: 91-194
Docket Nos.: 50-280
50-281
License Nos.: DPR-32
DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Units 1 and 2.

REPORT NUMBER

90-020-00

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

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 WTH 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.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Surry Power Station, Unit 1	0 5 0 0 0 2 8 0	1 OF 0 6

TITLE (4) Startup and Power Operation With One Train of Containment Spray System Inoperable Due to Improper Deletion of Pressure Switch Repair From Outage Work Scope

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 3	0 6	9 1	9 0	— 0 2 0	— 0 0	0 4	0 5	9 1	Surry Unit 2	0 5 0 0 0 2 8 1
										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)	1 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.38(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.38(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 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	B E	P S	A 6 1 0	Y		X	B E	P S	A 6 1 0	Y	
X	B E	P S	A 6 1 0	Y							

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)

On March 6, 1991, with Unit 1 operating at 100% power and Unit 2 operating at 90% power, Containment Spray (CS) Pump Discharge Pressure Switch 1-CS-PS-103C was declared inoperable based on the results of a management review of Station Deviation Reports. The pressure switch had been inoperable since a scheduled refueling calibration on November 11, 1990. The "B" Train of the Unit 1 CS System was declared inoperable at 1750 hours on March 6, 1991 in accordance with Technical Specification 3.4. Pressure Switch 1-CS-PS-103A was also tested and failed. The function performed by these switches (initiation of Chemical Addition Tank isolation from the suction of a failed CS Pump) was re-assessed and found to be unnecessary; therefore, the CAT isolation valves (1-CS-MOV-103A,B,C,D and 2-CS-MOV-203A,B,C,D) were de-energized in the open position. The "B" Train of the CS System was returned to service at 1710 hours on March 7, 1991. The event had no safety consequences since at least one CS train was operable during the period the pressure switches were inoperable. The event was caused by weaknesses in the Instrument Department Preventive Maintenance Program. This program is being upgraded. Permanent disabling or removal of the CAT isolation valves, logic, and pressure switches is being evaluated. This report is required by 10CFR50.73(a)(2)(i)(B) because Unit 1 was operated in a condition prohibited by Technical Specifications.

1.0 DESCRIPTION OF THE EVENT

On March 6, 1991, with Unit 1 operating at 100% power and Unit 2 operating at 90% power, Containment Spray (CS) Pump Discharge Pressure Switch 1-CS-PS-103C [EIIS-BE,PS] was declared inoperable based on the results of a management review of Station Deviation Reports. The pressure switch, which had been found inoperable during a routine refueling calibration on November 11, 1990, had not been returned to service prior to startup and was still in an inoperable condition with its contacts stuck closed. Pressure switch 1-CS-PS-103C is one of two pressure switches at the discharge of CS Pump 1-CS-P-1B [EIIS-BE,P] provided to initiate isolation of the Chemical Addition Tank (CAT) [EIIS-BE,TK] from the pump suction in the event of pump failure. These switches are designed to open on increasing CS Pump discharge pressure. If the pressure switches are not open following a two minute time delay with a High-High Consequence Limiting Safeguards (CLS) signal present, motor operated valves 1-CS-MOV-103A and 1-CS-MOV-103C [EIIS-BE-V] would close to isolate the CAT from the 1-CS-P-1B pump suction. These valves are arranged in parallel and closure of each valve is actuated by a single pressure switch. With pressure switch 1-CS-PS-103C stuck closed, valve 1-CS-MOV-103C would have closed after a two minute time delay if a High-High CLS signal had been present.

Technical Specification 3.4.A requires that the CS System, including interlocks required to operate under accident conditions, be operable when Reactor Coolant System temperature or pressure exceed 350 degrees Fahrenheit or 450 psig, respectively. With pressure switch 1-CS-PS-103C inoperable, the "B" Train of the Unit 1 CS System was declared inoperable at 1750 hours on March 6, 1991 and a 24 hour action statement entered.

Instrument and Control (I & C) Technicians tested Pressure Switch 1-CS-PS-103A, which initiates closure of valve 1-CS-MOV-103A. This switch, which had been calibrated with satisfactory results during the 1990 Unit 1 refueling outage, also failed in the closed position.

A re-assessment of the need for the CAT isolation logic was performed by the Nuclear Analysis and Fuels Department. This feature was installed as a design change because it was believed necessary to maintain the pH of the containment spray liquid within a narrow range. The reassessment indicated that it is not necessary to control spray pH within strict limits during injection. If a CS Pump were to fail with the CAT isolation valves remaining open, sufficient caustic flow would still be delivered to the operating CS pump because of inherent design characteristics.

A Safety Evaluation and Justification for Continued Operation (JCO) were prepared to allow operation of Unit 1 and Unit 2 with the CAT isolation valves (1-CS-MOV-103A,B,C,D and 2-CS-MOV-203A,B,C,D) de-energized in the open position. Following review and approval of the Safety Evaluation and JCO, tagout of the valves, changes to appropriate procedures, and briefings with licensed operators, the Unit 1 CS System was returned to service, and the 24 hour action statement exited at 1710 hours on March 7, 1991.

This report is required by 10CFR50.73(a)(2)(i)(B) because Unit 1 was operated in a condition prohibited by Technical Specifications.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The Containment Spray System, in conjunction with the Recirculation Spray System [EIIS-BE], is designed to cool and depressurize the containment to subatmospheric pressure following a Loss of Coolant Accident (LOCA). Containment Spray flow is from a common Refueling Water Storage Tank (RWST) [EIIS-BE,TK] and a common Chemical Addition Tank (CAT) to two 100% capacity CS Pumps and associated spray headers. The CAT adds a caustic (Sodium Hydroxide) solution to the CS flow to remove radioactive iodine from the containment atmosphere and to control the pH of the containment sump fluid. The caustic flow isolation feature was a design change intended to limit the amount of caustic solution which could gravity feed to the RWST through the suction line of a failed CS Pump.

With pressure switch 1-CS-PS-103C failed in the closed position, valve 1-CS-MOV-103C would have closed after a two minute delay if a High-High CLS signal were present; however, caustic flow would have been available to CS Pump 1-CS-P-1B through the parallel valve 1-CS-MOV-103A. With both 1-CS-PS-103A and 1-CS-PS-103C failed in the closed position, valves 1-CS-MOV-103A and 1-CS-MOV-103C would have closed two minutes following initiation of a High-High CLS signal, isolating the CAT from the suction of CS Pump 1-CS-P-1B. Caustic flow would still have been available to the "A" Train, which was verified to have been operable during the period that the "B" Train CAT isolation logic was inoperable. The CS System was, therefore, capable of performing its intended function, and there were no actual or potential adverse consequences to public health and safety.

3.0 CAUSE OF THE EVENT

A Root Cause Evaluation attributed the event to weaknesses in the Instrument and Control Preventive Maintenance Program.

Pressure switch 1-CS-PS-103C was initially found inoperable on November 11, 1990 when Instrument and Control (I & C) Technicians attempted to perform a refueling calibration using procedure IMP-C-G-35, "Pressure Switch Checkout". The I & C Technicians found the switch stuck in the closed position. A Station Deviation was submitted as required, with the switch noted as being inoperable. Unit 1 was in a condition in which CS was not required to be operable, and the CS system was already considered to be out of service. A replacement switch was not available on site and was placed on order. The Work Order originally written for calibration of the switch was kept open awaiting receipt of the replacement switch. The Station Deviation was not placed on the Unit 1 Startup Assessment List because the Work Order was being tracked as a separate startup item for evaluation. The Work Order, however, was a Preventive Maintenance (PM) rather than a Corrective Maintenance Work Order. The I & C PM program, governed by procedure SUADM-M-41, "Instrument Department Preventive Maintenance Program", did not require that a Corrective Maintenance Work Order be generated for the switch replacement. During a Startup Assessment meeting on November 28, 1990, the Work Order was removed from the Startup Assessment List because it was presented as not being a startup requirement. This resulted in Unit 1 startup proceeding without pressure switch 1-CS-PS-103C being returned to service.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

Upon confirmation that pressure switch 1-CS-PS-103C was inoperable, the "B" Train of the Unit 1 CS System was declared inoperable at 1750 hours on March 6, 1991 and a 24 hour action statement entered in accordance with Technical Specification 3.4. Pressure Switch 1-CS-PS-103A was also tested.

A re-assessment of the need for the CAT isolation logic was performed by the Nuclear Analysis and Fuels Department. It was concluded that isolation of the CAT from the suction of an idle CS Pump was not necessary. The CAT isolation valves for both units (1-CS-MOV-103A,B,C,D and 2-CS-MOV-203A,B,C,D) were de-energized in the open position.

The Unit 1 CS System was returned to service, and the 24 hour action statement exited at 1710 hours on March 7, 1991.

5.0 ADDITIONAL CORRECTIVE ACTION(S)

I & C Technicians tested Pressure Switches 1-CS-PS-103B,D and 2-CS-PS-203A,B,C,D, which initiate closure of CAT isolation valves 1-CS-MOV-103B,D and 2-CS-MOV-203A,B,C,D, respectively. Satisfactory results were obtained with the exception of 2-CS-PS-203A which failed in the closed position.

A search was performed to determine if similar pressure switches were installed in other applications. It was determined that similar switches were installed in the Auxiliary Building Ventilation System. A review of testing records showed that these pressure switches were demonstrated operable during calibrations and/or performance of various Periodic Tests. No additional testing of the Auxiliary Building Ventilation System pressure switches was considered necessary.

Component Failure Analyses (CFAs) will be performed to determine the specific failure mechanism(s) of pressure switches 1-CS-PS-103A, 1-CS-PS-103C and 2-CS-PS-203A.

An engineering study will be performed to evaluate the removal or permanent disabling of the CAT isolation valves, logic, and pressure switches.

A Root Cause Evaluation of the event was performed.

6.0 ACTIONS TO PREVENT RECURRENCE

The I & C Department PM program is being upgraded as part of an overall PM Upgrade Project. As I & C PM tasks are identified, they become subject to the controls of Administrative Procedure VPAP-0803, "Preventive Maintenance Program". VPAP-0803 governs other PM activities at the station and addresses the use of Corrective Maintenance Work Orders as well as evaluation and approval of PM deferral requests. Until VPAP-0803 is fully implemented for Instrument and Control tasks, Corrective Maintenance Work Orders will be written when work required by Calibration, PM, or Periodic Test procedures can not be completed. Additionally, the Startup Assessment process has been strengthened to better identify and track closure of discrepant conditions.

7.0 SIMILAR EVENTS

None.

8.0 ADDITIONAL INFORMATION

Failed Components:

ASCO Tripoint Pressure Switch, Model Number SA12BKR/TF10A32R