10CFR50.73

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

June 8, 1992

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

Serial No.: 92-394
SPS:RCB
Docket No.: 50-280
License No.: DPR-32

Dear Sirs:

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

REPORT NUMBER

50-280/92-008-00

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,

M. R. Kansler
Station Manager

Enclosure

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

M. W. Branch
NRC Senior Resident Inspector
Surry Power Station

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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 5

TITLE (4) Unit 1 Charging/High Head Safety Injection Pump Configuration Outside Plant Design Basis Because of Inadequate Procedure Change Implementation

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
0 5	1 1	9 2	9 2	— 0 0 8	— 0 0	0 6	0 8	9 2		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)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	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)	X 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
M. R. Kansler, Station Manager	AREA CODE 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	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

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 May 11, 1992, with both Unit 1 and Unit 2 operating at 100% power, a Licensed Control Room Operator noted that the Unit 1 Charging/High Head Safety Injection (HHSI) Pump alignment was in a configuration such that, considering the most limiting single failure under a certain accident sequence, HHSI flow would not have occurred automatically. Specifically, the "A" Pump was in standby, the "B" Pump was running, and the "C" Pump was in the pull-to-lock (PTL) position (and therefore although available it was technically inoperable). Since an undervoltage condition on the emergency bus supplying the "A" Pump would have locked out this pump, its undervoltage lockout should have been defeated while the "C" pump was in PTL. Otherwise, a concurrent failure of the "B" Pump during an accident would have resulted in a condition requiring manual operator intervention to establish HHSI flow. Except for the interlock on the "A" pump breaker, the three Unit 1 charging pumps were available, and they were immediately realigned to a configuration where the "B" and "C" Pumps were operable. The Unit 2 pump configuration was acceptable. No safety consequences resulted from this event because of procedural controls and operator training. The event was caused by the inadequate implementation of a procedural change. This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(ii)(B).

1.0 DESCRIPTION OF THE EVENT

On May 11, 1992, with both Unit 1 and Unit 2 at 100% power, a Licensed Control Room Operator in the process of assuming duties at the Unit 1 control board, noted that the Unit 1 Charging Pump configuration was such that the undervoltage lockout on Charging/High Head Safety Injection (HHSI) Pump "A" [EIIS-BQ, P] should have been defeated. Investigation determined that this lockout had not been defeated which rendered two of the three HHSI Pumps on Unit 1 technically inoperable, considering the most limiting single failure. This condition existed because the "A" pump interlock would have prevented automatic initiation of HHSI flow in a certain accident sequence. Specifically, an emergency bus [EIIS-EB, BU] undervoltage condition with the "C" Pump alternate power supply breaker [EIIS-EB, BKR] racked out would result in a trip and lockout of the "A" Pump. Thus, with the "A" and "B" Pumps initially operable and the "C" Pump handswitch in the pull-to-lock position, operator action would have been necessary to ensure HHSI flow in a design basis accident with a loss of off site power and a failure of the "B" Pump to start. Critical operation for greater than twenty-four hours with less than two Charging/HHSI Pumps operable is prohibited by Technical Specification 3.3.B.2. This configuration, which placed Unit 1 in a condition outside its design basis, existed from initial criticality on May 1, 1992, until its discovery on May 11, 1992.

The breaker interlock/lockout arrangement for the Surry Charging/HHSI Pumps is shown in Figure 1. The undervoltage lockout of the "A" Pump was part of the original plant design and was provided to ensure that no more than one Charging/HHSI Pump could be powered by a single Emergency Diesel Generator [EIIS-EB, DG].

Upon recognizing the nonconforming condition described herein, the "A" Pump was immediately placed in pull-to-lock and the "C" pump was placed in automatic on its normal ("H" Bus) supply breaker. This alignment left the "B" and "C" Pumps operable, aligned to different emergency buses, and in compliance with Technical Specification 3.3.B.2. The Unit 2 pump alignment was satisfactory.

This report is required by 10CFR50.73(a)(2)(i)(B) and 10CFR50.73(a)(2)(ii)(B) since a condition existed which was in noncompliance with Technical Specifications and outside the design basis of the plant.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

The Charging/HHSI Pumps supply normal reactor coolant system makeup and reactor coolant pump seal water injection. These pumps also provide HHSI flow in an accident condition. Borated water is delivered from the Refueling Water Storage Tank to the reactor core to provide core cooling and negative reactivity addition following a Loss of Coolant Accident (LOCA) or a Main Steam Line Break (MSLB). One Charging/HHSI Pump is capable of providing 100% of design HHSI flow. Throughout the period covered by this event, the three Charging/HHSI Pumps remained available with their emergency power supplies operable.

With the "A" and "B" Charging/HHSI Pumps initially operable and the "C" Pump handswitch in the pull-to-lock position, a LOCA with a Loss of Off Site Power and a single active failure would have resulted in a lack of automatic HHSI initiation. Manual operator action would have been necessary to restart the "A" Pump.

Operators have been thoroughly trained on Charging/HHSI Pump interlocks and on the required responses to an undervoltage event. Simulator validation has shown that operators immediately (within 15 seconds) diagnose and restore Charging/HHSI flow in the event of an "A" Pump lockout.

Review of design basis accident analyses indicates that acceptance criteria for both LOCA (peak clad temperature) and MSLB (departure from nucleate boiling) are met assuming that Charging/HHSI flow is restored in approximately 60 seconds. Source term is unaffected, and the current site boundary dose and control room habitability calculations would remain bounding.

It is concluded that this event created no hazard to public health and safety.

3.0 CAUSE OF THE EVENT

The Root Cause Evaluation Team which was convened to investigate the event concluded that inadequate implementation of a procedure change was the root cause. A design change initiated as part of the corrective action for the earlier event had determined that a different Charging/HHSI Pump configuration should be implemented. This configuration would allow three pumps in automatic, thus eliminating the necessity to defeat the undervoltage interlock on the "A" Pump during normal operations. Station procedures had been revised

accordingly, and operating personnel had been trained on the new pump configuration. During the technical review conducted on this design change, a concern was raised over the capability of the Auxiliary Ventilation System [EIIS-VF, FAN] to adequately handle the new pump/damper configuration. Accordingly, it was decided to test the ventilation system prior to implementing the design change. Pending completion of ventilation testing, a temporary change to the procedure governing charging pump configuration was processed which allowed Charging/HHSI Pump alignment at the Operations Shift Supervisor's discretion. The changed procedure, which did not address the pump interlock/lockout configuration discussed herein, was still in effect when Unit 1 was taken critical following the most recent refueling outage. At criticality the system was aligned with the "A" pump in Standby, the "B" pump in Run, and the "C" Pump in Pull-To-Lock. For the reasons previously described, this alignment rendered the "A" and "C" Pumps technically inoperable.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

The Unit 1 Charging/HHSI Pumps were immediately realigned to a configuration where the "B" and "C" Pumps were operable, and the "A" Pump was in pull-to-lock. This evolution was accomplished from the Control Room by switch manipulation. In this configuration, lockout of the "A" Pump was no longer a concern, and two pumps were operable in accordance with Technical Specification requirements.

The Unit 2 Charging/HHSI Pump alignment was verified to be satisfactory.

5.0 ADDITIONAL CORRECTIVE ACTION(S)

A Station Deviation Report was initiated, and the required one-hour notification was made to the NRC in accordance with 10CFR50.72. A Root Cause Evaluation Team consisting of Corporate and Station personnel was convened. A Standing Order was issued to Operations Department personnel pending permanent procedure revision. This Standing Order directed the defeat of the "A" Pump undervoltage trip whenever the "A" Pump was one of the operable pumps. The Minimum Equipment List in the Control Room was revised to address the "A" Pump undervoltage configuration, a "Caution" tag was placed on the Main Control Board, and operating shifts were briefed on the event by Station Management.

Management personnel have been reinstructed on the requirement for effective change implementation and communicating the impact of changes to concerned individuals.

6.0 ACTIONS TO PREVENT RECURRENCE

Station Management is initiating an evaluation to strengthen the change control process at the station. This evaluation will study the change mechanisms and assure the controls are effective and integrated into routine operations. Also, reevaluation of the Charging/HHSI configuration/interlock scheme is being conducted to ascertain if hardware modifications are warranted.

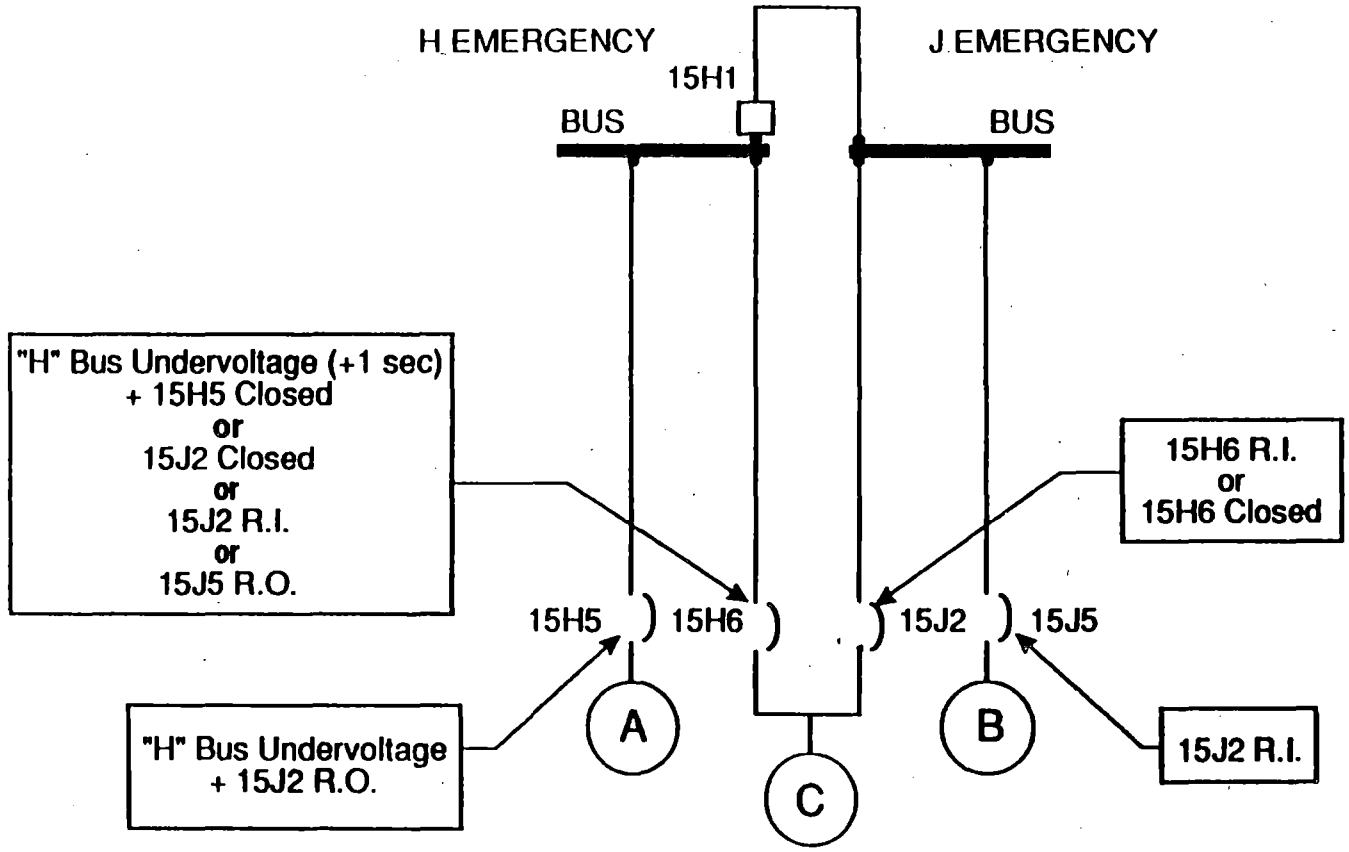
7.0 SIMILAR EVENTS

Licensee Event Report (LER) 91-020-00, dated September 20, 1991, reported a similar Charging/HHSI pump alignment. The cause of this event was the lack of adequate review of operability considerations of the Charging/HHSI Pump interlocks during an earlier design modification. This inadequate review led to an acceptance of manual operator intervention in lieu of the automatic function assumed in the design basis of the plant. Operating in this condition had been accepted as satisfactory, however further review determined that such manual intervention would be unacceptable.

The event described herein was a result of the same Charging/HHSI Pump alignment, but the root causes of the two events were different. Corrective actions had been taken as a result of the earlier LER to establish policies and procedural controls to assure the availability of automatic actuation functions for safety systems. In this isolated instance, however, those controls were bypassed by an inadequate change process.

8.0 ADDITIONAL INFORMATION

None.



Conditions Which Will Trip and Lockout Surry Charging Pump Breakers

Figure 1