

**Virginia Electric and Power Company  
Surry Power Station  
5570 Hog Island Road  
Surry, Virginia 23883**

June 10, 1996

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

Serial No.: 96-307  
SPS:JDK  
Docket No.: 50-280  
50-281  
License No.: DPR-32  
DPR-37

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 and 2.

**REPORT NUMBER**

50-280/96-003-00

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,



D. A. Christian  
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

170020

TE22

**LICENSEE EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

SURRY POWER STATION, Unit 1

DOCKET NUMBER (2)

05000 - 280

PAGE (3)

1 OF 5

TITLE (4)

Control Room Air Handling Units Inoperable Due to Mechanical Failure

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 NAME	DOCKET NUMBER
05	13	96	96	-- 003 --	00	06	07	96	FACILITY NAME	DOCKET NUMBER
										05000 -
										05000 -

OPERATING MODE (9)	P	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR:(Check one or more) (11)								
		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(c)		
POWER LEVEL (10)	100%	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		
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)		
		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 (Including Area Code)
D. A. Christian, Station Manager	(804) 357-3184

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
B	VI	UDMP	E322	Yes					

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On May 13,1996, with Unit 1 at 100%, the Main Control Room (MCR) and Emergency Switchgear Room (ESGR) Air Handling Units (AHUs) were swapped to support testing of Chiller Condenser 4C Service Water Pump. Indicated air flow to the MCR was low using either Unit 1 AHU. Both AHUs were declared inoperable which is a condition outside Technical Specification (TS) TS 3.23. A six hour action statement to place Unit 1 in Hot Shutdown was entered at 0515 in accordance with (IAW) TS 3.0.1.

The AHUs backdraft damper counterweight arms were adjusted. Flow and coil/filter delta pressures were verified satisfactory in accordance with procedure requirements. The six hour action statement was exited at 0821 hours and the seven day action statement was exited at 1532 hours.

Engineering investigated the event and determined that the resultant average MCR air temperature would be approximately 79 degrees Fahrenheit versus the design average of 75 degrees Fahrenheit. At this temperature, MCR spaces would remain habitable and no equipment malfunctions would occur due to the increased temperature. Therefore, the health and safety of the public are not affected.

This report is being made pursuant to 10CFR50.73(a)(2)(i)(B) as the station operated in a condition not allowed by TS 3.23.

**LICENSING EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
SURRY POWER STATION, Unit 1		05000 - 280		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
				96	- 003 -	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**1.0 DESCRIPTION OF THE EVENT**

At approximately 0500 hours on May 13, 1996, with Unit 1 at full power and Unit 2 at cold shutdown for a scheduled refueling outage, testing of Main Control Room Chiller Condenser 4C Service Water Pump 1-VS-P-1C was initiated in accordance with 0-OPT-VS-001, Control Room Air Conditioning System Pump and Valve Inservice Testing. This testing was being performed on a monthly basis due to the pump being in "alert" status based on upper bearing vertical vibration. The test lineup required swapping from the "1C" Air Handler Group (1-VS-AC-2 and 6) to the redundant "1A" Group (1-VS-AC-1 and 7).

At 0505 hours, the "1C" Air Handlers were secured, one minute later the "1A" Air Handlers were started. It was noticed that the ventilation noise level was abnormally low. Investigation revealed that the backdraft damper for 1-VS-AC-1 [EIIIS-VI-UDMP] appeared to be open; however, the AHU filter and coil differential pressure gauges indicated abnormally low at 0.10" and 0.09" H<sub>2</sub>O, respectively. The indicated filter DP was below the specified value of 0.16". The backdraft damper was inspected for free movement and it was found to move freely in the flow stream and found it to be free of obstruction. The AHU was declared inoperable and a seven day action statement was entered in accordance with Technical Specification 3.23.

The system was returned to its previous lineup. Ventilation noise and flow were noted to be lower than when the "1C" Group was previously in service. The backdraft damper for 1-VS-AC-2 appeared to be as far open as the backdraft damper on 1-VS-AC-1 had been when it was running; however, the filter and coil DP indications for 1-VS-AC-2 were 0.12" and 0.09" H<sub>2</sub>O, respectively. The minimum specified value is 0.16" H<sub>2</sub>O. The 1-VS-AC-2 backdraft damper was inspected for freedom of movement. The damper moved freely and opened when rotated.

At 0515 hours, 1-VS-AC-2 was declared inoperable. Since TS 3.23 does not address both 1-VS-AC-1 and 1-VS-AC-2 being inoperable, a condition not allowed by Technical Specifications existed. In accordance with TS 3.0.1, a six hour action statement to place Unit 1 in Hot Shutdown was entered.

**LICENSING EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SURRY POWER STATION, Unit 1	05000 - 280	96	- 003 -	00	3 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

The HVAC maintenance crew and the system engineer were contacted. Initial troubleshooting focused on potential blockage of the Unit 1 MCR supply ductwork, since both Unit 1 MCR AHUs were producing low flow. The HVAC crew checked the smoke damper in the Unit 1 MCR supply ductwork and found that it was full open. The access panel downstream of the smoke damper was then removed and an internal inspection of the ductwork was begun. No blockage of the ductwork was found.

Upon further inspection, it was noticed that the counterweight arms on the 1-VS-AC-1 and 1-VS-AC-2 backdraft dampers appeared to be out of position as indicated by the alignment marks. The HVAC crew re-positioned the 1-VS-AC-2 counterweight arm to the alignment marks and AHU flow returned to normal as indicated by the filter and coil DP indications, ventilation flow, and noise. Flow was verified to be adequate by anemometer measurements in accordance with 0-NSP-VS-001, Control Room Envelope Air Conditioning System and 1-VS-AC-2 was declared operable. The six hour TS 3.0.1 action statement was exited at 0821 hours. A seven day TS 3.23 action statement remained in effect due to 1-VS-AC-1 remaining inoperable.

The 1-VS-AC-1 counterweight arm was re-positioned to the alignment marks and AHU flow was verified to be adequate in accordance with 0-NSP-VS-001. The AHU was declared operable and the seven day TS 3.23 action statement was exited at 1609 hours. This report is being made pursuant to 10CFR50.73(a)(2)(i)(B) as the station operated in a condition not allowed by TS 3.23.

**2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS**

The minimum measured flow, during the event, through either Unit 1 MCR AHUs was 3,500 cfm. Unit 2 AHUs were fully functional, providing an air flow of approximately 12,000 cfm to the MCR. A minimum total air flow of 15,000 cfm was supplied to the MCR space. Air flow into this space is normally 22,000 cfm. With Unit 2 in a Refueling Mode and Unit 1 operating at 100%, the heat load on the system was reduced.

**LICENSING EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SURRY POWER STATION, Unit 1	05000 - 280	96	- 003 -	00	4 OF 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Section 7.7.1 and 9.13.2 of the UFSAR set temperature ranges for the MCR. Instrumentation is designed to operate up to a temperature of 120 degrees Fahrenheit and a temperature range for personnel comfort is stated as 75 + 10 degrees Fahrenheit. Given the degraded air flows and the reduced requirements, an engineering evaluation determined that the MCR air temperature could have risen to 79 degrees Fahrenheit which is 4 degrees above the design average of 75 degrees Fahrenheit. The evaluation assumed one unit at cold shutdown and a LOCA on the non-refueling unit. A temperature of 79 degrees Fahrenheit meets the UFSAR requirements, the MCR spaces would remain habitable, and no equipment malfunctions would occur due to resultant temperatures. Therefore, the health and safety of the public were not affected.

**3.0 CAUSE OF THE EVENT**

The MCR AHUs were inoperable due to the counterweight arms for the backdraft dampers not being adequately secured to the damper blade shafts. This resulted in rotation of the counterweight arms relative to the shafts during damper operation. This misalignment of the counterweight arms prevented the backdraft dampers on 1-VS-AC-1 and 1-VS-AC-2 from fully opening, causing a low flow condition.

A contributing factor is the procedural requirement to verify backdraft damper position as closed after an AHU is secured. Manual manipulation of the counterweight arms can contribute to misalignment.

**4.0 IMMEDIATE CORRECTIVE ACTION(S)**

The 1-VS-AC-2 backdraft damper counterweight arm for AHU 1-VS-AC-2 was adjusted. Flow was verified satisfactory in accordance with procedure 0-NSP-VS-001. The six hour action statement in accordance with TS 3.0.1 was exited at 0821 hours. The station remained in the seven day action statement to place Unit 1 in Hot Shutdown in accordance with TS 3.23 for one inoperable AHU.

The backdraft damper counterweight arm for AHU 1-VS-AC-2 was adjusted. Flow was verified satisfactory in accordance with procedure 0-NSP-VS-001. The seven day action statement in accordance with TS 3.23 was exited at 1532 hours.

**LICENSING EVENT REPORT (LER)**

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SURRY POWER STATION, Unit 1	05000 - 280	96	- 003 -	00	5 of 5

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**5.0 ADDITIONAL CORRECTIVE ACTION(S)**

Procedures 0-OP-VS-006, Control Room and Relay Room Ventilation System, and 0-OPT-VS-001, Control Room Air Conditioning System Pump and Valve Inservice Testing, were changed to prohibit manual manipulation of AHU backdraft dampers and to use flow indications to verify proper damper operation. Operators were alerted to the procedure changes by shift orders.

A Root Cause Evaluation (RCE) team was promptly formed to investigate this event. The team is tasked with determining the cause and recommending actions to prevent a recurrence of this event.

**6.0 ACTIONS TO PREVENT RECURRENCE**

Recommendations from the RCE will be reviewed by management. Approved recommendations will be implemented.

**7.0 SIMILAR EVENTS**

None

**8.0 ADDITIONAL INFORMATION**

Unit 2 was in shutdown for a Refueling Outage during this event.