

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

September 10, 1991

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

Serial No.: 91-527
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

91-016-00

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

9109190295 910910
PDR ADDCK 05000280
S PDR

Handwritten initials/signature

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Surry Power Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 2 8 0	PAGE (3) 1 OF 0 4
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TITLE (4) Two Main Control Room/Emergency Switchgear Room Chillers Inoperable Due to Thermostat Replacement and Inoperable Chiller Service Water Pump

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	8	1 1 9 1 9 1	1	0 1 6	0 0	0	9	1 0 9 1	Surry Unit 2		0 5 0 0 0 2 8 1
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											

OPERATING MODE (9) N	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 M. R. Kansler, Station Manager	TELEPHONE NUMBER
	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	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	V I	M O G	0 8 0						

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH DAY YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On August 11, 1991, with Unit 1 and Unit 2 operating at 100% power, Main Control Room/Emergency Switchgear Room (MCR/ESGR) Chiller 1-VS-E-4C tripped and could not be restarted. The chiller was declared inoperable at 0152 hours. With chiller 1-VS-E-4C inoperable and chiller 1-VS-E-4A already in a 7-day Action Statement in accordance with Technical Specification 3.23.B for thermostat replacement, two of three MCR/ESGR chillers were considered inoperable. A condition not allowed by Technical Specification 3.23 existed and an Action Statement requiring Hot Shutdown within six hours was entered in accordance with Technical Specification 3.0.1. The problem with the "C" chiller was determined to be a failed service water pump motor due to an open phase. The replacement of the thermostat in the "A" Chiller was completed at 0249 hours. While the control room and Emergency Switchgear room temperatures were being monitored, MCR/ESGR chillers were secured for re-alignment. Following satisfactory testing, the "A" chiller was declared operable at 0420. With the "A" and "B" chillers operable, the 6-hour clock to Hot Shutdown was exited. The seven day clock remained in effect as originally scheduled while "C" chiller service water pump motor repairs continued. No significant safety consequences resulted from the event. An upgrade of the MCR/ESGR Air Conditioning System is in progress and will include the installation of two additional 50% capacity chillers. This report is required by 10 CFR 73.(a)(2)(i)(B).

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

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-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.

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

1.0 DESCRIPTION OF THE EVENT

On August 11, 1991, Unit 1 and Unit 2 were operating at 100% power. Main Control Room/Emergency Switchgear Room (MCR/ESGR) Chillers (EIS-VI-CHU) 1-VS-E-4B and 1-VS-E-4C were in operation with the "A" Chiller, 1-VS-E-4A, out of service for thermostat replacement. Control Room Operators noticed that the "C" chiller had tripped and its associated service water pump, 1-VS-P-1C, was not running. The "C" chiller was declared inoperable at 0152 hours due to the service water pump motor being inoperable. With the "C" chiller inoperable and the "A" chiller previously inoperable for replacement of its thermostat, a condition not allowed by Technical Specification 3.23 existed.

Technical Specification 3.23 requires that MCR/ESGR Chillers 1-VS-E-4A, 1-VS-E-4B and 1-VS-E-4C be operable when either unit is above Cold Shutdown. Technical Specification 3.23 permits one chiller to be inoperable for a maximum of seven days. With the "A" chiller previously inoperable for thermostat replacement, a seven-day Action Statement in accordance with Technical Specification 3.23 was in affect. When the "C" chiller tripped due to a service water pump motor failure, two of three MCR/ESGR chillers were inoperable. This condition is not allowed by Technical Specification 3.23, and Technical Specification 3.0.1 was entered. Technical Specification 3.0.1 requires that when a limiting condition for operation cannot be satisfied, the unit shall be placed in at least Hot Shutdown within six hours unless corrective measures are completed.

At 0152 hours on August 11, 1991, a six-hour clock to Hot Shutdown was entered in accordance with Technical Specification 3.0.1 due to two of three MCR/ESGR chillers being inoperable, a condition not addressed by Technical Specification 3.23.

This report is required by 10 CFR 50.73 (a)(2)(i)(B) since the station was operated in a condition not allowed by the Technical Specifications.

2.0 SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

Chillers 1-VS-E-4A, 1-VS-E-4B, and 1-VS-E-4C are part of the MCR/ESGR Air Conditioning System. This is a shared system designed to maintain the Unit 1 and Unit 2 MCR and ESGRs at or below design temperatures during normal operation and design basis accident conditions. Two chillers are required to operate in order to remove post accident design heat loads, assuming worst case ambient air temperature and service water temperature.

With the "A" chiller inoperable for thermostat replacement and the "C" chiller inoperable due to a failed service water pump motor, one chiller ("B") would have been available under accident conditions. Based on design calculations, this created the possibility that design temperatures could have been exceeded in the MCR and ESGRs in an accident situation. However, this condition existed for only a brief period of time. Temperature rise in the MCR and ESGRs would have been limited in an accident situation since service water temperature was below that assumed in

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

design calculations. The rate of temperature rise would also have been limited since one chiller remained operable throughout the event. In addition, past experience with a complete loss of MCR and ESGR air conditioning has shown that temperatures have not increased as rapidly as indicated by the design calculations. Therefore, it is concluded that no safety consequences resulted from this event.

3.0 CAUSE OF THE EVENT

The event was caused by "C" chiller service water pump motor (1-VS-PMO-1C) failing due to an open phase within the motor. The "A" phase motor stator internal winding terminal lug had separated. This separation caused the "A" phase to test "open" during troubleshooting efforts. The terminal lugs had been installed by the motor manufacturer.

4.0 IMMEDIATE CORRECTIVE ACTION(S)

MCR/ESGR temperature monitoring was initiated. Preparations to ramp Unit 1 and Unit 2 to Hot Shutdown were initiated. The thermostat replacement effort on the "A" chiller was completed. The "A" and "B" chillers were re-aligned for operation, loaded and tested with satisfactory results. Two chillers were returned to service on August 11, 1991 at 0420 hours.

5.0 ADDITIONAL CORRECTIVE ACTION(S)

The "C" chiller service water pump motor was repaired. The chiller's thermostat was replaced. The compressor was charged with Freon. The associated Y-strainer was cleaned. The "C" chiller was tested and returned to service on August 11, 1991 at 1812 hours. A failure evaluation has been initiated.

6.0 ACTIONS TO PREVENT RECURRENCE

An evaluation is being performed to determine the exact cause of the service water pump motor terminal lug failure. Appropriate preventive measures will be taken based upon the results of this evaluation.

An upgrade of the MCR/ESGR Air Conditioning System is in progress. The upgrade will include the installation of two additional 50% capacity chillers. These additional chillers will increase operational flexibility and improve the capability to withstand single failures.

7.0 SIMILAR EVENTS

None

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8.0 ADDITIONAL INFORMATION

Failed Components:

Motor Mfg. General Electric
Model 5K6227XH206A
HP 15
Serial No. FEJ611371
RPM 3510
230/460 Volt