NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

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 3

TITLE (4)

Failure of Recirculation Spray Pump Due to Foreign Material

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 6	0 7	8 7	8 7	— 0 1 2	— 0 0	0 7	0 7	8 7		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)	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
D. L. Benson, 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	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
A	B E	P	B 2 6 0	Yes							

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 June 7, 1987 with Unit 1 at 100% power, the Unit 1 outside recirculation spray pump, (EIIS-BE-P) 1-RS-P-2B, was declared inoperable due to high vibrations. As the pump could not be returned to service within 24 hours, the unit was ramped to hot shutdown and was subsequently placed in the cold shutdown condition as required by Technical Specification (3.4.B.2). An unusual event was declared at 0014 hours on June 8, 1987, and terminated at 0507 hours.

The pump high vibrations were caused by a threaded nut and bolt that were detached and located in the impeller region of the pump. The mechanism by which the nut and bolt entered the pump impeller region is unknown, but it is suspected they were left during prior maintenance. Additionally, during the pump disassembly and inspection, it was found that the seating surface for the pump motor was misaligned. This misalignment caused a bending moment on the 45 foot vertical pump shaft which resulted in increased wear on the bearings and impeller wear rings. The loose nut and bolt were removed and the pump was realigned. The pump was tested satisfactorily. An inspection was performed of the pump's suction and recirc. piping for foreign material.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
SURRY POWER STATION, UNIT 1	0 5 0 0 0 2 8 0	8 7	— 0 1 2	— 0 0	0 2 OF 0 3

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

1.0 Description of the Event

On June 7, 1987 with Unit 1 at 100% power, the Unit 1 outside recirculation spray pump, (EIIS-BE-P) 1-RS-P-2B, was declared inoperable due to high vibrations. As the pump could not be returned to service within 24 hours, the unit was ramped to hot shutdown and was subsequently placed in the cold shutdown condition as required by Technical Specification (3.4.B.2). An unusual event was declared at 0014 hours on June 8, 1987, and terminated at 0507 hours.

2.0 Safety Consequences and Implications

The Recirculation Spray (RS) system consists of four independent trains, each containing a pump, a heat exchanger, and a discharge spray ring. The RS system is used in conjunction with the Containment Spray system following a design basis accident. It provides the necessary cooling and depressurization of the containment and is capable of maintaining the containment pressure below atmospheric for an extended period. Each of the four trains of the RS system are 50% capacity. Since three of the subsystems remained operable throughout this event, an unreviewed safety question was not created and the health and safety of the public were not affected.

3.0 Cause

The pump high vibrations were caused by a threaded nut and bolt that were detached and located in the impeller region of the pump. The mechanism by which the nut and bolt entered the pump impeller region is unknown, but it is suspected they were left during prior maintenance.

Additionally, during the pump disassembly and inspection, it was found that the seating surface for the pump motor was misaligned. This misalignment caused a bending moment on the 45 foot vertical pump shaft which resulted in increased wear on the bearings and impeller wear rings.

4.0 Immediate Corrective Action

The unit was brought to hot shutdown and subsequently to cold shutdown in accordance with the appropriate Technical Specification limiting condition for operation.

5.0 Additional Corrective Action

The loose nut and bolt were removed and the pump was realigned. The pump was tested satisfactorily. An inspection was performed of the pump's suction and recirc. piping for foreign material.

6.0 Actions Taken to Prevent Recurrence

The other Unit 1 outside RS pump, 1-RS-P-2A, will be inspected during the next refueling outage to verify correct alignment of the motor seating surface.

7.0 Similar Events

None.

8.0 Manufacturer/Model Number

Bingham-Williamette/10 x 18B 2 Stage Type J - VCR.

VIRGINIA ELECTRIC AND POWER COMPANY
Surry Power Station
P. O. Box 315
Surry, Virginia 23883

July 7, 1987

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

Serial No.: 87-014
Docket No.: 50-280
Licensee No.: DPR-32

Gentlemen:

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

REPORT NUMBER

87-012-00

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

Very truly yours,

for

David L. Benson
Station Manager

Enclosure

cc: Dr. J. Nelson Grace
Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

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