

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>SURRY POWER STATION, UNIT 1</b>						DOCKET NUMBER (2) <b>0 5 0 0 0 2 8 0</b>			PAGE (3) <b>1 OF 0 4</b>		
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TITLE (4)  
**REACTOR TRIP (LOSS OF 1A FEED 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 6	1 3	8 4	8 4	0 1	5	0 6	2 9	8 4			0 5 0 0 0																																			
<table border="1"> <tr> <td>OPERATING MODE (9)</td> <td colspan="11">THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)</td> </tr> <tr> <td rowspan="5">POWER LEVEL (10) <b>1 0 0</b></td> <td><input type="checkbox"/> 20.402(b)</td> <td><input type="checkbox"/> 20.405(c)</td> <td><input checked="" type="checkbox"/> 50.73(a)(2)(iv)</td> <td><input type="checkbox"/> 73.71(b)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(i)</td> <td><input type="checkbox"/> 50.36(c)(1)</td> <td><input type="checkbox"/> 50.73(a)(2)(v)</td> <td><input type="checkbox"/> 73.71(c)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(ii)</td> <td><input type="checkbox"/> 50.36(c)(2)</td> <td><input type="checkbox"/> 50.73(a)(2)(vii)</td> <td rowspan="3">OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(i)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(A)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(iv)</td> <td><input type="checkbox"/> 50.73(a)(2)(ii)</td> <td><input type="checkbox"/> 50.73(a)(2)(viii)(B)</td> </tr> <tr> <td><input type="checkbox"/> 20.405(a)(1)(v)</td> <td><input type="checkbox"/> 50.73(a)(2)(iii)</td> <td><input type="checkbox"/> 50.73(a)(2)(ix)</td> <td></td> </tr> </table>												OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)											POWER LEVEL (10) <b>1 0 0</b>	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)	
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LICENSEE CONTACT FOR THIS LER (12)

NAME <b>J. L. WILSON, STATION MANAGER</b>		TELEPHONE NUMBER <b>6 0 4 3 5 7 - 3 1 8 4</b>	
AREA CODE			

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
X	S	D	P	B 2 6 0	Y				

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On June 13, 1984, with unit 1 at 100% power, the control room operator observed the loss of "A" main feed pump and the lowering of steam generator water levels. Upon receiving these indications, a manual turbine load runback of 266 megawatts was initiated to compensate for the lowered feedwater volumetric flow. However, an automatic reactor trip resulted from steam generator low level in "A" generator.

The low level in "A" steam generator was due to automatic tripping of "A" main feed pump on loss of lubricating oil system pressure. Apparently, low level vibrations resulted in the loosening of the bearing capscrews that eventually allowed the bearing housing to spin with the main feed pump shaft. When this occurred, the oil supply line and oil return line, which are attached to the housing sheared. This resulted in a loss of oil pressure which tripped the pump.

A review of the applicable corrective maintenance procedures revealed the bolt torque setting were not specified. Capscrew and bolt torque settings will be specified in the corrective maintenance procedure. Since bearing maintenance last took place in 1982, it is unlikely that the capscrews were improperly tightened during previously performed maintenance.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)  SURRY POWER STATION, UNIT 1	DOCKET NUMBER (2)  0 5 0 0 0 2 8 0 8 4 - 0 1 5 - 0 0 0 2 OF 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			

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

1. Description of the Event

On June 13, 1984, with unit 1 at 100% power, the control room operator observed the loss of "A" main feed pump (EIIS No. P) and the lowering of steam generator water levels. Upon receiving these indications, a manual turbine load runback of 266 megawatts was initiated to compensate for the lowered feedwater volumetric flow. However, an automatic reactor trip resulted from steam generator low level in "A" generator.

Following the trip, all control and protection systems functioned as expected with the exception of the following:

- 1) Failure of the mechanical seal on "A" main feed pump. This resulted in:
  - (a) Wetting of "A" and "B" feed pump motors (EIIS No. MO). Both pumps were placed out of service.
  - (b) Wetting motor control centers 1A1-2 and 1B1-3. Both were removed from service.
- 2) "A" main feed regulation block valve (MOV-FW-154A) failed to a grounded motor lead.
- 3) The source range (EIIS No. RI) was manually re-instated although a review of records indicates that the intermediate range would likely have re-instated given more time.

Operators followed appropriate plant procedures and quickly stabilized the plant following the trip.

2. Safety Consequences and Implications

The capability to supply feedwater to the generators is normally provided by the operation of the condensate and feedwater systems. In the event the normal feedwater supply is lost, residual heat removal would continue to be assured by the availability of either the steam driven auxiliary feedwater pump or one of the motor driven auxiliary feedwater pumps and the 110,000 gallon condensate storage tank. In the event of a fire which would render the auxiliary feedwater pumps inoperable, residual heat removal would continue to be assured by the availability of either of the motor driven auxiliary feedwater pumps from the opposite unit. In addition, all other safety related parameters remained within the bounds of the accident analysis. Therefore, this event did not constitute an unreviewed safety question nor affect the health and safety of the public.

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			0 1 5	0 0	0 3	OF	0 4

TEXT (If more space is required, use additional NRC Form 365A's) (17)

3. Cause

The automatic reactor trip was initiated from low water level in "A" steam generator. The low level in "A" steam generator was due to automatic tripping of "A" main feed pump on loss of lubricating oil system pressure.

Low level vibration apparently resulted in the loosening of the bearing capscrews that eventually allowed the bearing housing to spin with the main feed pump shaft. When this occurred, the oil supply line and oil return line, which are attached to the housing, sheared. This resulted in a loss of oil pressure which tripped the pump. Since bearing maintenance last took place in 1982, it is unlikely that the capscrews were improperly tightened during previously performed maintenance. A review of the applicable corrective maintenance procedure revealed the bolt torque settings were not specified.

Secondary Cause Failures Are:

- 1) Destruction of the mechanical seals occurred when the bearing housing was no longer attached to the pump casing and the weight of the shaft was supported by the seals.
- 2) Wetting of both main feed pump motors and motor control centers 1A-2 and 1B-3 were caused by spray from failed mechanical seals on "A" main feed pump.
- 3) The grounded motor on valve (MOV-FW-154A) was due to a cut motor lead.
- 4) The failure of the automatic re-instatement of the source range channels NI-32 and 32 was due to slight under compensation of the intermediate range channel NI-36.

4. Immediate Corrective Action

Operators performed all appropriate Emergency Procedures and Function Restoration Procedures to ensure the plant was returned to a stable condition. This included securing "A" main feed pump and manually re-instating the source range channels.

Also, the STA performed the status tree reviews to ensure specific plant parameters were noted and appropriate procedures were used to maintain those parameters within safe bounds.

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5. Additional Corrective Actions

The motors for both the main feed pumps were dried and tested satisfactory. The motor control centers 1A1-2 and 1B1-3 were dried. All damaged parts of the "A" main feed pumps were replaced and bearing capscrews were tightened in accordance with manufacturers specifications. NI-36 was not compensated following the trip, since the amount of correction was deemed minimal. During a subsequent unit 1 trip and return to power, the source range channels automatically re-instated.

6. Action Taken to Prevent Recurrence

Capscrew and bolt torque settings will be specified in the corrective maintenance procedure.

7. Generic Implications

None.

# Vepco

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

JUN 29 1984

Serial No: 84-028

Docket No: 50-280

License No: DPR-32

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

Gentlemen:

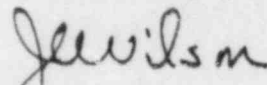
Pursuant to Surry Power Station Technical Specifications, the Virginia Electric and Power Company hereby submits the following Licensee Event Report for Surry Unit 1.

REPORT NUMBER

85-015-00

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,



J. L. Wilson  
Station Manager

Enclosure

cc: Mr. James P. O'Reilly  
Regional Administrator  
Suite 2900  
101 Marietta Street, NW  
Atlanta, Georgia 30303

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