

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Surry Power Station, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 2 8 1										PAGE (3) 1 OF 3																																										
TITLE (4) Reactor Trip by Turbine Trip																																																														
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)																													
1			2			1			6			8			4			8			4			0			2			1			0			1			0			8			1			2			8			5			0 5 0 0 0 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) 01 210						20.402(b)						20.405(c)						<input checked="" type="checkbox"/> 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)						50.73(a)(2)(i)						50.73(a)(2)(viii)(A)																																												
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LICENSEE CONTACT FOR THIS LER (12)																																																														
NAME R. F. Saunders, Station Manager										TELEPHONE NUMBER AREA CODE 8 10 4 3 5 7 1 - 3 1 1 8 4																																																				
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																																																														
CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPDs		CAUSE		SYSTEM		COMPONENT		MANUFACTURER		REPORTABLE TO NPDs																																												
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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																																				
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)																																																														
<p style="text-align: center;">REACTOR TRIP BY TURBINE TRIP</p> <p>On December 16, 1984, with Unit 2 at approximately 20% power and ramping down for a secondary system repair, the unit tripped when the breakers for B Main Feed Pump opened. At the time of the unit trip, no valid trip condition existed for B main feed pump.</p> <p>From an investigation of the pump trip circuitry and operators observations, it is believed the pump tripped due to an invalid low flow condition coincident with the feed pump recirculation valve closed.</p> <p>The trip circuitry of the pump was tested satisfactorily. During subsequent unit 2 ramps, the pump protection circuitry operated satisfactorily.</p> <p>Evidence obtained during an investigation of a similar event that occurred on Unit 1 for the 'A' MFP on 4/29/85 confirmed that the cause of the Unit 2 feed pump trip was due to the recirc. valve not opening during the low pump flow conditions.</p> <p>The Unit 1 investigation discovered that the Unit 2 pressure switches PS-FW-250B and 250BI (EIIIS PS), which signal low flow conditions for the recirc. valve/pump trip logic, were out of calibration.</p>																																																														
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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		OF
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

REACTOR TRIP BY TURBINE TRIP1. Description of the Event

On December 16, 1984, with unit 2 at approximately 20% power and ramping down for a secondary repair, the unit tripped when the breakers for B main feed pump opened. At the time of the unit trip, no valid trip conditions existed for B main feed pump. The feed pump recirculation control valve was observed to remain closed during the event. Following the trip, all control and protection systems functioned as expected.

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 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.

3. Cause

The cause of the feed pump trip was due to excessive drift in the pressure switches that input the low flow signals to the recirc. valve/pump trip logic. There are two separate switches, PS-FW-250B and PS-FW-250BI, that activate the pump trip circuit logic and signal the recirc. valve to open, respectively. The low flow trip for PS-FW-250B was found to be slightly higher than that of the trip setpoint for PS-SW-250BI; therefore, during the rampdown, the pump trip logic, including the 15 sec. time delay was made up prior to the recirc. valve receiving an open signal and the feed pump tripped.

4. Immediate Corrective Action

Operators performed all appropriate Emergency Procedures and Function Restoration Procedures to ensure the plant was returned to a stable condition.

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

REACTOR TRIP BY TURBINE TRIP5. Additional Corrective Actions

Following the B main feed pump trip, the pump trip circuits for low lube oil pressure, low pump suction pressure, and low pump flow in coincidence with the recirculation valve not open were tested satisfactorily. Prior to the unit trip, annunciators for low lube oil pressure, low pump suction pressure and the pump overcurrent trip were not present.

In addition, the feed pump breakers were found to have no overcurrent or ground conditions. During subsequent Unit 2 rampdowns and return to power, the pump protection circuitry operated satisfactorily.

A few months following this event, on April 29, 1985, an event occurred on Unit 1 involving the 'A' main feed pump and an extensive investigation was initiated to determine the cause. Part of the investigation included the review of past calibration history sheets for the flow indicating pressure switches to the Unit 1 and Unit 2 main feed pumps' recirc. valve/pump trip logic. This review discovered that the low flow trip settings recorded on March 2, 1985 for PS-FW-250B and PS-FW-250Bi for the Unit 2 'B' MFP had drifted to the point such that the recirc. valve would not receive an open signal prior to the pump receiving a trip signal. The switches were recalibrated to their proper setpoints on March 2, 1985.

6. Action Taken to Prevent Recurrence

Plant operating procedures will be modified to ensure that both feed pumps will remain in operation until such time as the recirc. valve has been verified in the open position. In addition, an EWR has been initiated to study the feasibility of modifying the recirc. valve/pump trip circuit to prevent a similar occurrence. The above corrective actions will be applied to Unit 1, also.

7. Generic Implications

None.



VIRGINIA POWER

Surry Power Station
P. O. Box 315
Surry, Virginia 23883

August 12, 1985

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

Serial No: 84-045A
Docket No: 50-281
License No: DPR-37

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Power hereby submits the following Licensee Event Report Update for Surry Unit 2.

REPORT NUMBER

84-021-01

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,

R. F. Saunders
Station Manager

Enclosure

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

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