

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) SURREY POWER STATION, UNIT 1										DOCKET NUMBER (2) 0 5 0 0 0 2 8 0				PAGE (3) 1 OF 0 3	
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TITLE (4) Reactor Trip - NI-31 Spike															
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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 4	0 7	8 4	8 4	0 0 8	0 0	0 5	1 0	8 4				0 5 0 0 0		
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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) 0 0 0	20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)		
	20.405(a)(1)(i)				50.36(a)(1)				50.73(a)(2)(v)				73.71(c)		
	20.405(a)(1)(ii)				50.36(a)(2)				50.73(a)(2)(vi)				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)						
	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)(ix)							

LICENSEE CONTACT FOR THIS LER (12)															
NAME J. L. Wilson, Station Manager												TELEPHONE NUMBER 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 NPDOS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDOS
X	I G	D E T	W 1 2 0	Y					
X	I G	A M P	W 1 2 0	Y					

SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)										NO				

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

On April 7, 1984, with unit 1 at 5×10^{-11} amperes on the Intermediate Range and inserting control rods shutdown, a reactor trip was initiated when source range NI-31 (EIS No. R1) reinstated with indication above the high flux trip setpoint. Immediately following the trip, all control and protection systems functioned as expected with the exception of source range NI-31, which failed high.

Approximately 4.5 hours following the reactor trip, with NI-31 failed high, source range NI-32 was declared inoperable due to noise. With the unit at a hot shutdown condition, source range indication was unavailable for about 4 hours. Appropriate abnormal procedures were implemented to insure positive reactivity was not added to the core.

The pre amp to NI-31 was replaced and source range indication was established.

Prior to the start-up, the source range detector for NI-32 was replaced and the channel returned to service.

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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)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8	4	—	0	0	8
SURRY POWER STATION, Unit 1	0 5 0 0 0 2 8 0	8	4	—	0	0	8
					0	0	0
					0	2	OF 0 3

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

1. Description of the Event

On April 7, 1984, with unit 1 at 5×10^{-11} amperes on the Intermediate Range and inserting control rods shutdown, a reactor trip was initiated when source range NI-31 (EIIIS No. R1) reinstated with indication above the high flux trip setpoint. Immediately following the trip, all control and protection systems functioned as expected with the exception of source range NI-31, which failed high. Operators followed appropriate plant procedures and quickly stabilized the plant following the trip.

Approximately 4.5 hours following the reactor trip, with NI-31 failed high, source range NI-32 was declared inoperable due to noise. With the unit at a hot shutdown condition, source range indication was unavailable for about 4 hours. Appropriate abnormal procedures were implemented to insure positive reactivity was not added to the core.

2. Safety Consequences and Implications

The source range high neutron-flux reactor trip circuit trips the reactor when one of the two source range channels reads above the trip setpoint. The high flux trip, provides protection during reactor startup. It can be manually bypassed when one of two intermediate range channels reads above the P-6 setpoint value, and is automatically reinstated when both intermediate range channels decrease below (P-6).

Section 14.2.1 of the updated final safety analysis report (UFSAR) does not take credit for the source range high flux trip during a power excursion from hot shutdown. The UFSAR does not recognize the existence of this trip and allows the source range to be bypassed when appropriate conditions exist. Since the safety analysis depends on the Doppler effect and the power range high flux low setpoint trip to turn a power transient from low power, and both units power range high flux low setpoint trips were functional, the health and safety of the public were not affected.

In addition, prior to resetting the reactor trip breakers, source range indication was established.

3. Cause

The reactor trip was caused by the source range NI-31 spiking high upon reinstating. Troubleshooting the instrument drawer for NI-31 revealed that a faulty pre amp caused the channel to fail high.

The secondary event, the failure of NI-32, has been attributed to source range detector failure.

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SURRY POWER STATION, Unit 1	0 5 0 0 0 2 8 0	8 4	— 0 0 8	— 0 0	0 3	OF	0 3

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

4. Immediate Corrective Action

Following the reactor trip, operators performed all appropriate emergency procedures and function restoration procedures to ensure the plant was returned to a stable condition. Power fuses to the instrument drawer for NI-31 were removed and the detector was taken out of service.

Upon failure of NI-32, approximately 4.5 hours following the reactor trip, operators performed abnormal procedure (AP-4) which required the following for the loss of both source range channels:

- 1) Evacuate the reactor containment.
- 2) Insert the shutdown banks.
- 3) Increase boron concentration to cold shutdown specifications and disable the primary makeup dilute function.
- 4) Rack-out the control rod drive M/G power supply breakers.
- 5) Do not cooldown or make any changes in plant status which may add positive reactivity to the core.

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

5. Additional Corrective Actions

The pre amp to NI-31 was replaced and source range indication was established.

Prior to the start-up, the source range detector for NI-32 was replaced and the channel returned to service.

6. Action Taken to Prevent Recurrence

None are deemed necessary.

7. Generic Implications

None.