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)	DOCKET NUMBER (2)	PAGE (3)
SURRY POWER STATION, UNIT 2	0 5 0 0 0 2 8 1	1 OF 0 4

TITLE (4)

REACTOR TRIP (LOAD SHEDDING ACTUATED)

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
1 0	2 9	8 4	8 4	— 0 1 5	— 0 0	1 1	2 8	8 4		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N		20.402(b)	20.405(c)	✓ 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10)		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
1 0 0		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)	
		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
	AREA CODE
R. F. SAUNDERS, STATION MANAGER	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	
E	I G	R I	W 1 2 0	Y		E	A B	P	W 1 2 0	Y	
E	B A	R L Y	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 October 29, 1984, unit 1 was in refueling shutdown and unit 2 was at full power. The "D" transfer bus was deenergized for unit 1 breaker testing being conducted by Control Operations. The load shed selector switch was in enable with testing in progress. As a result of this testing, load shedding was initiated. The unit 2 "A" main feedpump (2-FW-P-1A) tripped as a result of load shedding leading to a low steam generator level and a reactor trip.

The main contributing factor to this event was inadequate procedures. These procedure problems have been or are being corrected.

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NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

1. Description of the Event

On October 29, 1984, unit 1 was in refueling shutdown and unit 2 was at full power. The "D" transfer bus (See figure 1) was deenergized for unit 1 breaker testing being conducted by Control Operations. The load shed selector switch was in enable with testing in progress. As a result of this testing, load shedding was initiated. The unit 2 "A" main feedpump (2-FW-P-1A) tripped as a result of load shedding leading to a low steam generator level and a reactor trip.

The following secondary events also occurred on unit 2:

During the trip, control rod M-10 appeared to momentarily stick at 30 steps.

Nuclear Instrumentation channel NI-32 failed to automatically reinstate, and its initial response after reinstatement was abnormal.

Relay AFP-YB failed which caused the following:

SOV-MS-202B (Steam Supply for Aux. Feed Pump)	- Failed Open
MOV-FW-251B, D, F (Aux. Feed Disch. MOV's)	- Failed Open
TV-BD-200B, D, E (S/G Blowdown Trip Valves)	- Failed Closed

When the auto transfer from station service to reserve station service occurred, "A" reactor coolant pump (RCP) lost power because the "D" transfer bus was deenergized for testing.

The operators noted that all other control and protection systems functioned properly.

2. Safety Consequences and Implications

The control rods are rapidly inserted (tripped) into the core upon initiation of a reactor trip to shutdown the reactor. The UFSAR states that the reactor will be shutdown even if the most reactive rod was stuck at the fully withdrawn position. Since rod M-10 indicated a momentary sticking at 30 steps and it is suspected that the indicator was the problem, this is not a safety concern.

The source range channel NI-32 was manually reinstated. The redundant channel remained operable.

The valves controlled by relay AFP-YB repositioned to perform their safety function when the relay failed. These valves could not be repositioned to their normal position when plant conditions had stabilized. The redundant valves for each non-functioning valve remained operable.

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

In addition, all other safety related systems remained operable during the event and plant parameters remained within the bounds of the accident analysis. Therefore this event did not constitute an unreveiwed safety question and the health and safety of the public remained unaffected.

3. Cause

The load shed switch should have been in bypass since unit 1 was shutdown and all of its large electrical loads were deenergized. If it had been in bypass, the unit would not have tripped.

The Control Operations procedures for breaker testing did not contain instructions relating to load shedding.

The problem with control rod M-10 is suspected to have been with the rod position indicator (RPI) although no specific problem with the rod or the RPI was found.

The NI-32 reinstating problem is suspected to be in the "crowbar" circuit that is internal to the power supply. The erratic operation was attributed to a detector failure.

The relay failed when one of the coil leads opened.

4. Immediate Corrective Actions

The Operators performed all appropriate emergency and function restoration procedures to ensure that the plant was returned to stable conditions.

The Control Operations personnel stopped work in their procedure.

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

5. Additional Corrective Actions

The "D" transfer and "A" station service electrical buses were reenergized to return the station electrical distribution to normal. The load shed switch was also placed in the bypass position.

The circuitry for control rod M-10 was checked. Rod drop testing was performed on rod M-10 with the primary system temperature at approximately 280^0F and 500^0F. No faults or problems were found and the failure was not reproducable.

Source range channel NI-32 was manually reenergized. The initial response of the detector was erratic. The detector was replaced prior to unit startup.

The failed relay and its coil were replaced.

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6. Action Taken to Prevent Recurrence

A plant specific Control Operations staff is being developed. Surry will revise the appropriate operating procedures to clear up any ambiguities relating to bypassing and enabling the load shed system.

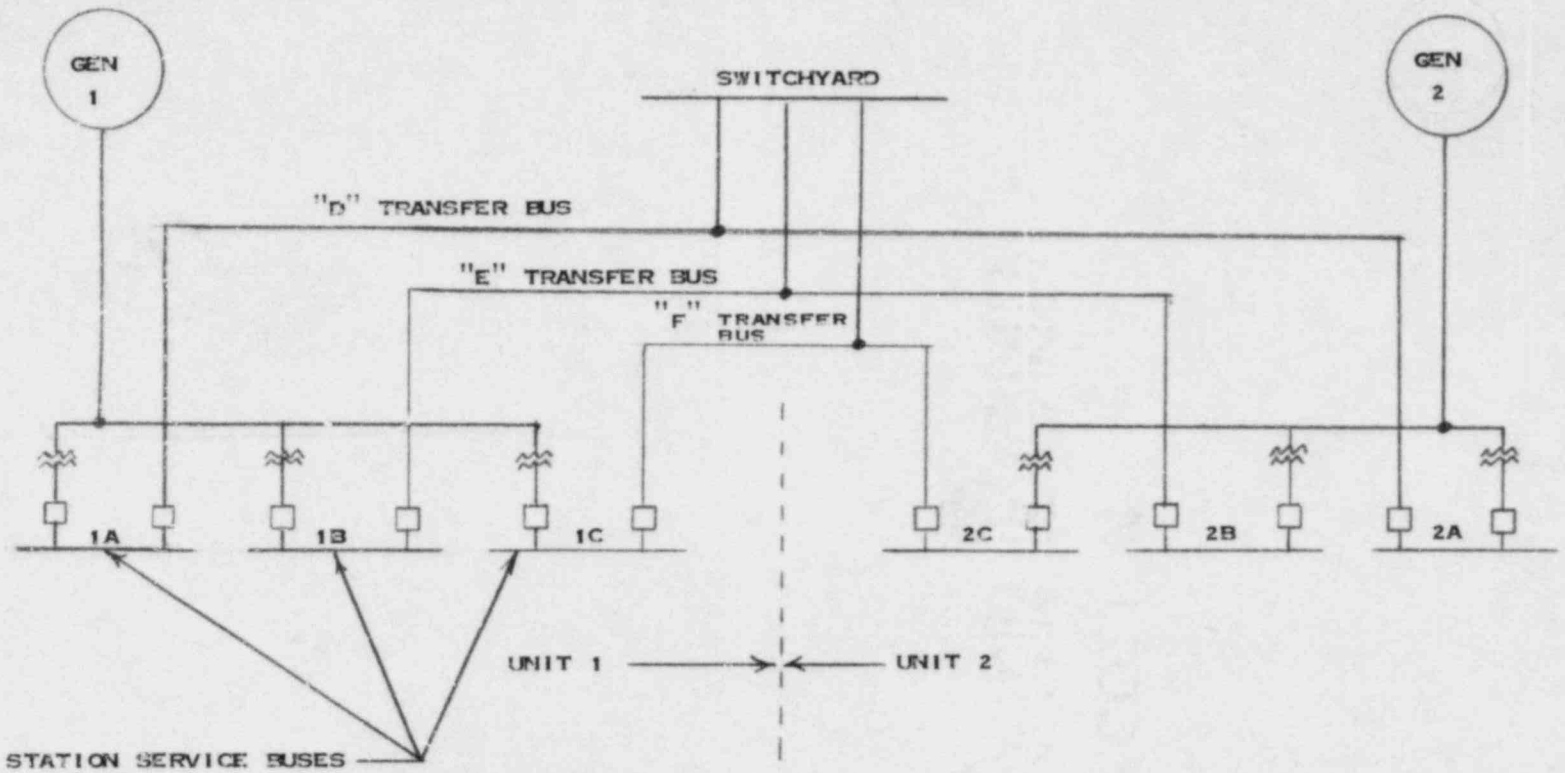
Control Operations will identify and change, where necessary, all relay testing series procedures to address load shedding. A Control Operations' procedure coordinator position was created and filled to improve thoroughness of their procedures.

The power supply for NI-32 will be replaced when a replacement is obtained. It is planned to send relay AFP-YB to an independent testing facility to have the failure mechanism analyzed.

7. Generic Implications

None.

FIGURE 1



LEGEND

- 22KV/4160V STATION SERVICE(S) TRANSFORMER

□ - 4160V BREAKER

Vepco

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

NOV 2 8 1984

Serial No: 84-037

Docket No: 50-281

License No: DPR-37

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 2.

REPORT NUMBER

84-015-00

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,

R F Saunders

R. F. Saunders
Station Manager

Enclosure

cc: Mr. James P. O'Reilly
Regional Administrator
Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30323

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