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the southern electric system

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HL-2206
003392

May 11, 1992

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNIT 2
NRC DOCKET 50-366
OPERATING LICENSE DPF-5
LICENSEE EVENT REPORT
COMPONENT FAILURE RESULTS IN LOSS OF POWER
TO RPS BUS 'B' AND ESF SYSTEMS ACTUATIONS

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a) (2) (iv), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning a component failure which resulted in a loss of power to RPS bus 'B' and ESF systems actuations. This event occurred at Plant Hatch - Unit 2.

Sincerely,

W. G. Hairston, III

OCV/cr

Enclosure: LER 50-366/1992-005

cc: Georgia Power Company
Mr. H. L. Sumner, General Manager - Nuclear Plant
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. K. Jabbour, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebneter, Regional Administrator
Mr. L. D. Wert, Senior Resident Inspector - Hatch

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NRC Form 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
PLANT HATCH UNIT 2	0 5 0 0 0 3 6 6	1 OF 4

TITLE (4)
COMPONENT FAILURE RESULTS IN LOSS OF POWER TO RPS BUS B AND ESF SYSTEMS ACTUATIONS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
									PLANT HATCH UNIT 1	0 5 0 0 0 3 2 1
0 4	1 9	9 2	9 2	0 0 5	0 0	0 5	1 1	9 2		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)			
POWER LEVEL	1 0 0	20.402(b)	20.405(c)	X 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)
		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	
STEVEN B. TIPPS, MANAGER NUCLEAR SAFETY AND COMPLIANCE, HATCH	912	367-7851

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORT TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORT TO NPRDS	
X	J E	5 9	G 0 8 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES(If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (16)

On 4/19/92 at 1221 CDT, Unit 1 and Unit 2 were in the Run mode at a power level of 2436 CMWT (100% rated thermal power). At that time, Reactor Protection System (RPS) bus "B" lost power when the output breaker for the "B" Motor/Generator (M/G) set, its normal power supply, tripped. This caused a loss of power to the "B" channels of the RPS, Process Radiation Monitors, Neutron Monitoring System, Primary Containment Isolation System (PCIS), and Offgas Radiation Monitoring System. These systems tripped on loss of power per design resulting in a scram signal in RPS channel "B", closure of various PCIS valves, and actuation of the pressurization mode of the Main Control Room Environmental Control System. Licensed operations personnel restored power to RPS bus "B" via its alternate supply at 1222 CDT and all affected equipment was restored to its normal configuration by 1235 CDT. RPS bus "B" was left on its alternate power supply pending investigation of the cause of the M/G set output breaker trip. On 4/21/92 at 1725 CDT, RPS bus "B" was returned to its normal power supply after completion of the investigation and replacement of a relay in the M/G set.

The cause of this event is component failure. Investigation revealed that M/G set "B" Overvoltage Relay 2C71-K754B had actuated causing the "B" M/G set output breaker to open per design. However, no overvoltage condition was found to have occurred. It was concluded that the relay failed in a spurious manner.

Corrective action for this event was replacing the failed relay and returning the M/G set to service.

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
Energy Industry Identification System codes are identified in the text as (EIIS Code XX).

DESCRIPTION OF EVENT

On 4/19/92 at 1221 CDT, Unit 1 and Unit 2 were in the Run mode at a power level of 2436 CMWT (100% rated thermal power). At that time, Reactor Protection System (RPS, EIIS Code JE) bus "B" lost power when the output breaker for the "B" Motor/Generator (M/G) Set, its normal power supply, tripped. This caused a loss of power to the "B" channels of the RPS, Process Radiation Monitors (EIIS Code IL), Neutron Monitoring System (EIIS Code IG), Primary Containment Isolation System (PCIS, EIIS Code JM), and Offgas Radiation Monitoring System (EIIS Code IL). The "fail safe" design of these systems resulted in their assuming the tripped state when power was lost.

Per design, the loss of power to these systems resulted in a scram signal in RPS channel "B", closure of various Group 2 PCIS valves, closure of the Group 5 PCIS Reactor Water Cleanup (EIIS Code CE) system outboard isolation valve 2G31-F004, and closure of Group 1 PCIS valves 2B21-F019 and 2B31-F020. Additionally, the Main Control Room Environmental Control System (EIIS Code VI), a system common to both units, automatically entered the pressurization mode and the operating steam packing exhauster (EIIS Code TC) tripped. All affected systems responded per design.

At 1222 CDT, RPS bus "B" was placed on an alternate power supply and the scram signal in RPS channel "B" was reset. By 1235 CDT, affected systems had been returned to their normal status. RPS bus "B" was left on its alternate power supply pending investigation of the cause of the M/G set output breaker trip. On 4/21/92 at 1725 CDT, RPS bus "B" was returned to its normal power supply after completion of the investigation and replacement of a defective overvoltage relay in the M/G set.

CAUSE OF EVENT

The cause of this event is component failure. Investigation revealed that M/G set "B" Overvoltage Relay 2C71-K754B had actuated causing the "B" M/G set output breaker to open per design. This relay trips the M/G set output breaker on a sensed overvoltage condition to protect the RPS bus and the instrumentation powered by the bus from damage due to a sustained overvoltage condition. However, no reason for the relay actuation was found. It had been calibrated successfully on 4/18/92 per calibration procedure 57CP-C71-001-2S, "RPS MG Set Power Monitors Calibration." Following the trip of the "B" M/G set output breaker, the overvoltage relay was calibrated again using procedure 57CP-C71-001-2S. No problems were found during the calibration; however, it was

noted before and after the calibration that the overvoltage relay would trip with a slight tapping or jarring of the relay housing. Available information indicates the relay has been installed in the M/G set since 1977. A review of maintenance history for this relay and the relays in the Unit 2 "A" M/G set and the Unit 1 "A" and "B" M/G sets revealed no previous problems with these relays. The overvoltage relay was replaced with an exact kind relay from existing stock and the M/G set was returned to service on 4/21/92 at 1725 CDT. No problems occurred during or subsequent to the transfer of the RPS bus to the M/G set. It was concluded, therefore, that the relay failed in such a manner as to cause it to actuate spuriously.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73(a)(2)(iv) because an event occurred in which Engineered Safety Feature (ESF) systems experienced unplanned automatic actuations. Specifically, the output breaker of the "B" RPS M/G set tripped, de-energizing RPS bus "B" and causing actuations of the ESF systems described previously.

RPS busses "A" and "B" are designed to supply stable electrical power to a variety of plant instrumentation systems, including the Process Radiation Monitoring System, Neutron Monitoring System, RPS, PCIS, and Offgas Radiation Monitoring System. A high degree of power stability is achieved by using M/G sets to condition the power supplied to the RPS. However, should the power output from the M/G sets fail to meet voltage or frequency requirements, breakers are designed to trip to protect the instrumentation supplied by the RPS bus. M/G set "B" Overvoltage Relay 2C71-K754B trips the M/G set output breaker on a sensed overvoltage condition to protect the RPS bus and the instrumentation powered by the bus from damage due to a sustained overvoltage condition. Other relays are designed to trip the RPS bus power supply breakers on undervoltage and underfrequency.

The design of the systems listed in the above paragraph is such that upon loss of power, they fail to the "safe" condition. In this event, the "B" M/G set output breaker tripped resulting in a loss of power to RPS bus "B". All systems responded per design upon the loss of power, i.e., trips, actuations, and isolations occurred as expected.

Based on the above analysis, it is concluded that this event had no adverse impact on nuclear safety. This analysis is applicable to all power levels.

CORRECTIVE ACTIONS

The overvoltage relay was replaced with an exact kind relay from existing stock per Maintenance Work Order 2-92-2680 and the M/G set was returned to service on 4/21/92 at 1725 CDT.

ADDITIONAL INFORMATION

No systems other than those previously mentioned in this report were affected by this event.

Failed Component Information:

Master Parts List Number: 2J71-K754B
Manufacturer: General Electric
Model Number: 3300A03B0914
Type: Overvoltage Relay
Manufacturer Code: G080
EIIS System Code: JE
Reportable to NPRDS: Yes
Root Cause Code: X
EIIS Component Code: 59

Previous similar events in the last two years in which power was lost unexpectedly to an RPS bus resulting in ESF system actuations were reported in the following Licensee Event Reports:

50-321/1991-014, dated 09/09/91,
50-321/1991-015, dated 09/18/91,
50-321/1991-021, dated 10/25/91,
50-321/1992-005, dated 03/18/92,
50-366/1991-020, dated 12/02/91.

Corrective actions for the previous events would not have prevented this event because those events did not result from a failure of or spurious operation of the overvoltage relay for the M/G set output breaker.