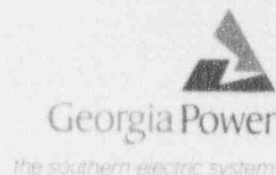


Georgia Power Company
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 877-7279

J. T. Beckham, Jr.
Vice President - Nuclear
Hatch Project

April 12, 1994



Docket No. 50-321

HL-4555

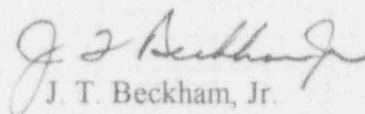
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Edwin I. Hatch Nuclear Plant - Unit 1
Licensee Event Report
Movement in Cable Lug Connection Results in
Unplanned Engineered Safety Features 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 slight movement of a cable lug connection in a reactor protection system panel which resulted in unplanned engineered safety features actuations.

Sincerely,


J. T. Beckham, Jr.

OCV/cr

Enclosure: LER 50-521/1994-001

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. Ebnetter, Regional Administrator

Mr. L. D. Wert, Senior Resident Inspector - Hatch

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB87714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Edwin I. Hatch Nuclear Plant - Unit 1

DOCKET NUMBER (2)

0 5 0 0 0 3 2 1

PAGE (3)

1 OF 5

TITLE (4)

Slight Movement in Cable Lug Connection Results in Unplanned Actuations of Engineered Safety Features

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 NAME	DOCKET NUMBER(S)	
03	14	94	94	001	00	04	12	94		05000321	1
										05000321	1

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 2 (Check one or more of the following) (11)										
1	20.402(b)	20.405(c)	X	50.73(a)(2)(v)	73.71(b)						
POWER LEVEL (10) 100	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)(vii)(A)							
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(vii)(B)							
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER (include area code)	
NAME Steven B. Tipps, Nuclear Safety and Compliance Manager		AREA CODE 912	3671-7851

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)

On 3/14/94 at 0931 EST, Unit 1 was in the Run mode at a power level of 2436 CMWT (100 percent rated thermal power). At that time, non-licensed electricians were attempting to identify a cable in a panel containing circuitry for the Reactor Protection System (RPS) in preparation for maintenance. To identify a cable, an electrician lightly pulled on the label tag to re-position it. This action apparently moved a connection that wasn't tight, momentarily interrupting power to one breaker supplied by the RPS power supply system. Since RPS powered systems are designed to actuate on a loss of power or control signal, several Engineered Safety Features actuated, including the outboard Group 5 Primary Containment Isolation System (PCIS) valve, several outboard Group 2 PCIS valves, and the Main Control Room Environmental Control System. Licensed personnel verified the actuations occurred as expected. When no valid cause for the signal was confirmed to exist, the signal was reset and affected valves and systems were returned to their normal lineups. The cause of this event was an electrical connection in an RPS panel that wasn't tight. When an electrician moved a wire label, the connection apparently moved, momentarily interrupting power to one breaker supplied by the RPS power supply system, producing the actuations described above. The connection will be tightened when the reactor is defueled during the Unit 1 Fall 1994 Refueling Outage. An external connection drawing will be updated after the connection is tightened, and this will be completed by 01/15/95. In the interim, a caution tag has been placed on the panel and monthly inspections of the panel will be performed using infrared thermography.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Edwin I. Hatch Nuclear Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 1	LER NUMBER (6)			PAGE (3)	
		YEAR 9 4	SEQUENTIAL YEAR - 0 0 1	REVISION NUMBER - 0 0	2	OF 5

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

PLANT AND SYSTEM IDENTIFICATION

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

DESCRIPTION OF EVENT

On 3/14/94 at 0931 EST, Unit 1 was in the Run mode at a power level of 2436 CMWT (100 percent rated thermal power). At that time, non licensed electricians were verifying wiring connections inside Reactor Protection System (RPS, EIS Code JE) panel 1C71-P001 to support work on a cable lug that wasn't fully torqued to its bus bar. This connection had been identified by the use of thermography on 3/5/94. The thermography was done as part of an engineering effort to assess the condition of electrical equipment in the RPS panels. The verification of the actual wiring configuration was done as a good maintenance practice and because the non-critical connection drawing in use at the time did not enable the electricians to correctly identify the cable connection that needed to be tightened. To help identify a cable in the panel, one of the electricians carefully moved a partially concealed label tag on one of the cables in the panel so he could read it. This action apparently moved the connection slightly, momentarily interrupting power to one breaker in the RPS power supply system.

The design of the RPS is "fail-safe" in that a loss of power or control signal causes systems powered by the RPS power supply to change states to their emergency configuration. Moving the connection caused Group 2 and Group 5 Primary Containment Isolation System (PCIS, EIS Code JM) valves to receive an automatic isolation signal. The Main Control Room Environmental Control System (MCRECS, EIS Code VI) entered the pressurization mode, the Primary Containment Hydrogen and Oxygen Analyzers (EIS Code IK) isolated, and several other systems tripped including the Reactor Water Cleanup (RWCU, EIS Code CE) system, the Fission Product Monitoring (FPM, EIS Code IJ) system, and the operating Steam Packing Exhauster.

Licensed personnel verified the proper plant response to the initiating signal per procedure 34AB-C71-002-1S, "Loss of RPS." When no valid cause for the signal was identified, the Group 2/5 signal was reset at 0957 EST. All affected systems were subsequently returned to their normal lineups.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1) Edwin I. Hatch Nuclear Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 1	LER NUMBER (6)			PAGE (3)	
		YEAR 9 4	SEQUENTIAL YEAR - 0 0 1	REVISION NUMBER - 0 0		

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

CAUSE OF EVENT

The cause of this event was slight movement of a cable lug that wasn't fully torqued to its bus bar in RPS power supply panel 1C71-P001. An electrician apparently moved the connection slightly during a pre-maintenance inspection as he was trying to reposition a partially concealed cable tag inside the panel. When this connection was moved, a momentary interruption of power to one breaker in the RPS power supply system resulted, followed by the actuations described above.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(iv) because unplanned actuations of engineered safety features (ESFs) occurred. Specifically, several ESFs actuated in response to a momentary interruption of power to one breaker in the RPS power supply.

The RPS power supply system is designed to supply stable 120-volt AC power to a variety of plant instrumentation systems including the Process Radiation Monitoring System, the Neutron Monitoring System, the Reactor Protection System, the Primary Containment Isolation System, and the Offgas Radiation Monitoring System. A high degree of power stability is achieved by using two motor-generator sets to condition the power supplied by the RPS power supply system. The electrical output of each motor-generator set energizes one of two RPS busses through RPS panel 1C71-P001. The subject cable lug is located on the neutral side of one of these two busses.

In this event, a cable lug that needed to be tightened was identified by thermography during an engineering effort to improve the condition of the RPS power supply system. Subsequent pre-maintenance inspection efforts apparently resulted in the connection being moved slightly, producing a momentary interruption of power to one of the breakers powered off the bus. The design of the RPS and the systems it powers is such that, upon loss of power or control signal, they deenergize to their "safe" configuration (i.e., they initiate their emergency or accident functions). All systems affected by this event responded per design given the signal introduced by the power interruption, and this was verified by licensed personnel immediately after the event occurred. No unexpected actuations occurred. Had a design basis accident occurred during this event, all affected plant systems would already have been in their emergency configurations.

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

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Edwin I. Hatch Nuclear Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 3 2 1	LER NUMBER (6)			PAGE (3)		
		YEAR 9 4	SEQUENTIAL YEAR - 0 0 1	REVISION NUMBER - 0 0			

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

CORRECTIVE ACTIONS

1. The connection in panel 1C71-P001 will be tightened when the reactor is defueled during the Unit 1 Fall 1994 Refueling Outage.
2. The external connection diagram for the involved RPS power supply panel will be updated after the connection has been tightened and verification of the actual configuration of the wiring in the panel has been done. This action will be completed by 01/15/95.
3. A caution tag has been affixed to panel 1C71-P001 to alert workers to the condition existing in the panel.
4. Panel 1C71-P001 will be inspected on a monthly frequency using infared thermography to assess the condition of the electrical equipment in this panel. This inspection will continue until such time that an evaluation of the results concludes the panel conditions are fully acceptable.

ADDITIONAL INFORMATION

1. Other Systems Affected: No systems were affected by this event other than those already mentioned in this report.
2. Failed Components Information: No component failures caused or resulted from this event.
3. Previous Similar Events: Events reported in the past two years in which the material condition of equipment (such as the subject connection in an electrical panel) resulted in unplanned ESF actuations are described in the following LERs:

50-321/1993-012, dated 07/09/93
50-321/1993-016, dated 01/06/94

50-366/1992-007, dated 07/10/92
50-366/1992-029, dated 01/15/93

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 30.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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		YEAR 9 4	SEQUENTIAL YEAR - 0 0 1	REVISION NUMBER - 0 0	5	OF 5

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

Corrective actions for these events included clearing a clogged instrument sensing line, replacing the packing and packing nut on an instrument valve, replacing a failed gasket, and securing electrical connections in a Main Control Room panel and in an RPS power supply panel. These actions would not have prevented this event because the specific components involved were all different from the one involved in this event. Moreover, this event occurred during investigation to identify areas in which the material condition of certain electrical components needed to be improved.