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

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January 11, 1993

Docket No. 50-366

HL-3105 004684

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

EDWIN I. HATCH NUCLEAR PLANT - UNIT 2 LICENSEE EVENT REPORT COMPONENT FAILURE RESULTS IN INOPERABILITY OF HIGH PRESSURE COOLANT INJECTION SYSTEM

Gentlemen:

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In accordance with the requirements of 10 CFR 50.73(a)(2)(v), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning a component failure which resulted in the momentary inoperability of the High Pressure Coolant Injection system. This event occurred at Plant Hatch - Unit 2.

Sincerely,

J. T. Beckham, Jr.

OCV/cr

Enclosure: LER 50-366/1992-028

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

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TITLE (4) COMPONENT FAIL	URE RESULTS IN MO	MENTARY INOPERABILIT	Y OF HIGH PRESSURE CO	OLANT INJI	ECTION SYSTEM
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On 12/18/92, at 0145 CST, Unit 2 was in the Run mode at 2436 CMWT (100 percent of rated thermal powar). At that time, a "HPCI System Inverter Circuit Failure" annunciator alarmed in the Main Control Room. Licensed personnel, in responding to the alarming annunciator, found the High Pressure Coolant Injection (HPCI) system flow controller in the manual mode with a zero speed demand signal displayed. In this condition, the HPCI turbine steam flow control valve would not automatically open in the event of an automatic initiation of the system. By 0146 CST, the licensed operator had transferred the flow controller back to automatic, at which time the demand signal was restored to 100 percent. The HPCI system was declared inoperable since the cause and consequences of the condition were yet to be determined. Limiting Condition for Operation (LCO) 2-92-1023 was initiated to track compliance with the Technical Specifications.

Electricians investigating the problem found that the inverter power sensing relay (2E41-K50) had failed, resulting in the alarming annunciator. It was determined that the inverter itself was operating properly and that the failed relay did not affect operability of the HPCI system. The system was, therefore, declared operable and the LCO was terminated at 0745 CST.

The cause of the event was component failure. A power supply perturbation, produced when the relay failed, caused the controller output to fail to zero. Corrective actions include temporarily deactivating the annunciator, implementing temporary compensatory actions for the deact.vated annunciator, and replacing the failed relay when a replacement is received on site.

(6-89) LICENSEE EVENT REPORT (LER) TEXT CONTINUATION			APPROVED ONB NO 3150-0104 EXPIRES: 4/30/92					
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PLANT AND SYSTEM IDENTIFICATION

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

DESCRIPTION OF EVENT

On 12/18/92, at 0145 CST, Unit 2 was in the Run mode at 2436 CMWT (100 percent of rated thermal power). At that time, a "HPCI System Inverter Circuit Failure" annunciator alarmed in the Main Control Room. Licensed personnel, in responding to the alarming annunciator, found the High Pressure Coolant Injection (HPCI, EIIS Code &J) system flow controller in the manual mode with a zero speed demand signal displayed. In this condition, the HPCI turbine steam flow control valve would not automatically open in the event of an automatic initiation of the system. With the system in standby, the flow controller is required to be in automatic, displaying a 100 percent speed demand signal. By 0146 CST, licensed personnel had transferred the flow controller back to the automatic mode, at which time the demand signal was restored to 100 percent. The HPCI system was declared inoperable since the cause and consequences of the condition were yet to be determined. Limiting Condition for Operation (LCO) 2-92-1023 was initiated to track compliance with the Technical Specifications.

Electricians investigating the problem found that the inverter power sensing relay (2E41-K50) had failed, resulting in the alarming annunciator. It was determined that the inverter itself was operating properly and that the failed relay did not affect operability of the HPCI system. The system was, therefore, declared operable and the LCO was terminated at 0745 CST.

CAUSE OF EVENT

The cause of the event was component failure. It is apparent that a short occurred in the coil of power sensing relay 2E41-K50 resulting in the relay failing to the deenergized state. The short circuit apparently caused a power perturbation in the inverter power supply circuit. This, in turn, caused the controller demand signal to drift to zero and the mode transfer relays of the system flow controller to deenergize, transferring the controller to the manual mode. Even though power was restored to the controller, the demand signal remained at zero due to a design feature of the controller. This design feature causes the controller manual mode output to follow or match the controller automatic mode output (which apparently was zero due to the momentary power failure) upon transfer of the controller to the manual mode.

The cause of the relay failure was attributed to the relay reaching its end of life. No external factors were identified that could have caused or contributed to the failure. A review of the Nuclear Plant Reliability Data System showed that this particular type of relay is very reliable. Consequently, it is concluded that this failure is an isolated event.

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REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required pursuant to 10 CFR 50.73(a)(2)(v) because a condition existed that could have prevented fulfillment of a safety function of a system designed to mitigate the consequences of an accident. Specifically, failure of a relay resulted in the output of the HPCI system flow controller failing to zero. In this condition, had the system been required to automatically initiate, the turbine steam flow control valve would have remained closed preventing automatic operation of the HPCI system. This condition existed for approximately one minute.

The HPCI system is designed to provide adequate cooling to limit fuel-clad temperature in the event of a small break in the nuclear steam supply system that does not result in rapid depressurization of the reactor vessel. The Automatic Depressurization System (ADS, EIIS Code JE) is the backup for the HPCI system and is initiated on a low reactor water level condition coincident with a Primary Containment high pressure condition. Upon initiation of ADS, the reactor is depressurized to a point where either the Low Pressure Coolant Injection (LPCI, EIIS Code BO) system or the Core Spray (CS, EIIS Code BM) system can operate to maintain adequate core cooling.

In this event, the HPCI system was rendered inoperable when a power sensing relay experienced a failure. The resulting power perturbation resulted in the output of the flow controller failing to zero. This condition existed for approximately one minute. Had the HPCI system received an initiation signal during this time, the system would not have automatically started. In responding to an event in which HPCI would be required to start, licensed plant operators are trained to immediately monitor core cooling systems in order to confirm proper system operation. Thus, the condition would most likely have been identified and corrected within seconds of the initiating event by the operators taking manual actions to initiate HPCI. Even if the condition had not been corrected, the ADS, the CS, and the LPCI systems were available to provide adequate core cooling had they been required. Also, the Reactor Core Isolation Cooling (RCIC, EIIS Code BN) system was available for vessel injection.

Based on the above information, this event had no adverse impact on nuclear safety. This evaluation applies to all operating modes.

CORRECTIVE ACTIONS

The relay will be replaced when the replacement is received on site.

The "HPCI System Inverter Circuit Failure" annunciator has been deactivated until the relay is replaced.

Until the relay is replaced and the annunciator returned to an operative status, the HFCI system flow controller will be checked twice during each shift to ensure that it is in the automatic mode and is displaying a 100 percent demand signal, which would demonstrate acceptable operation of the inverter.

(6-80) LICENSEE EVENT REPORT TEXT CONTINUATION	CLEAR REGULATORY COMMISSION	APPROVED 046 NO 3150-0104 EXPIRES: 4/30/92				
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ADDITIONAL INFORMATION

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

Two similar events have occurred in the previous two years in which a component failure resulted in the inability of a system to perform its intended salety function. These events were reported in the following LERs:

50-321/91-33, dated 1/27/92, 50-366/92-03, dated 3/31/92.

These events were not the result of the power sensing relay 2E41-K50 or its power supply failing. Corrective actions for these events involved replacing the affected components which did not include the relay. Since past corrective actions had no bearing on the power sensing relay, they could not have prevented the event addressed in this report.

Failed Component Information:

MPL (Plant Identifier): 2E41-K50 Part Number: CR120K22002AA Component Type: Control Relay Manufacturer Code: G082 EIIS Component Code: RLY EIIS System Code: BJ