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The Southern Electric System

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HL-2166
003292

April 9, 1992

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

PLANT HATCH - UNIT 1
NRC DOCKET 50-321
OPERATING LICENSE DPR-57
LICENSEE EVENT REPORT
HUMAN FACTORS RESULT IN
AUTOMATIC ENGINEERED SAFETY FEATURES ACTUATION

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv) and (v), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning human factors which caused an unplanned engineered safety features actuation. This event occurred at Plant Hatch - Unit 1.

Sincerely,

W. G. Hairston, III.

JKB/cr

Enclosure: LER 50-321/1992-007

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

IE22
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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 1	0 5 0 0 0 3 2 1	1 OF 4

TITLE (4)
HUMAN FACTORS RESULT IN AN AUTOMATIC ESF ACTUATION

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)
										0 5 0 0 0
0 3	1 6	9 2	9 2	0 0 7	0 0	0 4	0 9	9 2		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)					
	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)	
POWER LEVEL 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	X	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	
S. B. TIPPS, MANAGER NUCLEAR SAFETY & COMPLIANCE, HATCH	912	367-7851

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (16)

On 3/16/92, at approximately 0835 CST, Unit 1 was in the Run mode at 2436 MWT (100 percent rated thermal power). At that time, a High Pressure Coolant Injection (HPCI) system isolation annunciator alarmed in the Main Control Room, followed by automatic closure of valve 1E41-F002. Valve 1E41-F002 is the inboard Primary Containment Isolation System (PCIS) valve for the HPCI turbine steam supply line from the nuclear steam supply system. Investigation of the condition revealed that an Instrument & Controls (I&C) technician had inadvertently bumped the actuating arm of relay 1B21-K32A while installing the relay cover, causing a spurious trip signal. The cover had been removed previously during the performance of procedure 57SV-SUV-013-1S, "ATTS Panel 1H11-P927 Channel Functional Test and Calibration," for the purpose of determining the state of the relay. By 0840 CST, the relay cover had been properly installed, the isolation trip signal had been reset, and valve 1E41-F002 had been opened.

The cause of the event was less than optimum human factors. Specifically, the design of the GE HGA111J relay cover and mounting does not ensure proper alignment of the cover during or after its installation. An I&C technician apparently misaligned the relay cover while installing it and, consequently, bumped the relay actuating arm. Bumping the arm forced the relay into the energized position, causing a HPCI system isolation and closure of PCIS valve 1E41-F002.

Corrective actions for the event include counseling of the involved individual and training personnel.

PLANT IDENTIFICATION

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

DESCRIPTION OF EVENT

On 3/16/92, at approximately 0335 CST, Unit 1 was in the Run mode at 2436 CMWT (100 percent of rated thermal power). At that time, a High Pressure Coolant Injection (HPCI, EIIS Code BJ) system isolation signal was received, as evidenced by the associated annunciator alarming in the Main Control Room, followed by automatic closure of valve 1E41-F002. Valve 1E41-F002 is the inboard Primary Containment Isolation System (PCIS, EIIS Code JM) valve for the nuclear steam supply line to the HPCI turbine. This valve is normally open and is designed to automatically close upon receipt of a HPCI system isolation signal. At the time of the event, the HPCI system was in standby.

Investigation into the event revealed that an Instrument & Controls (I&C) technician inadvertently caused the HPCI system isolation during performance of procedure 57SV-SUV-013-1S, "ATTS Panel 1H11-P927 Channel Functional Test and Calibration." During testing of the HPCI room high temperature trip logic per the procedure, the technician was required to determine the state of relay 1B21-K32A, i.e., whether or not it was energized. In order to accomplish this, its opaque relay cover had to be removed. After the test was completed, the technician, while replacing the cover, bumped the relay actuating arm with the cover. This forced the relay into its energized position inducing a spurious trip signal into the HPCI system isolation logic.

The isolation logic functioned as designed, transmitting a trip signal to the HPCI turbine and a closure signal to PCIS valve 1E41-F002. By 0840 CST, the isolation signal had been reset and valve 1E41-F002 was opened using its remote manual control switch.

CAUSE OF EVENT

The cause of the event was less than optimum human factors. The relay cover and relay mount do not ensure proper alignment of the cover to the mount when installing the cover. Consequently, during cover installation, it is possible to misalign the cover and contact the relay actuating arm. The I&C technician apparently misaligned the relay cover while installing it and, consequently, bumped the relay actuating arm. The actuating arm was momentarily energized as a result of the bump. Momentary make-up of the relay contact generated a spurious trip signal in the HPCI isolation logic. The automatic seal-in feature of the logic functioned as designed, sealing in the signal, causing the system isolation and closure of valve 1E41-F002.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required pursuant to 10 CFR 50.73 (a)(2)(iv) because an unplanned automatic actuation of an Engineered Safety Feature (ESF) occurred. Specifically, PCIS valve 1E41-F002 automatically closed when a HPCI system isolation logic relay was inadvertently actuated. This report is also required pursuant to 10 CFR 50.73(a)(2)(v) because, in the event, a single train safety system was rendered incapable of performing its design function. Specifically, the HPCI system isolation would have prevented the HPCI system from automatically initiating.

The HPCI system is designed to automatically provide adequate cooling to the reactor vessel to limit fuel-clad temperature in the event of a 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 high Primary Containment (EIIS Code NH) pressure condition. The ADS will also initiate without the high Primary Containment pressure signal if the RPV low water level condition is sustained for 13 minutes. 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 provide adequate core cooling.

PCIS provides automatic isolation of the appropriate lines that penetrate Primary Containment (EIIS Code NH) to provide timely protection from the onset and consequences of an accident involving the gross release of radioactive materials from the fuel and the nuclear system process barriers. The system automatically functions when monitored parameters exceed design limits. One such monitored parameter is the HPCI room temperature. A high temperature in the HPCI room is indicative of a break in the nuclear steam system supply line to the HPCI turbine. Consequently, upon exceeding the design temperature limit, PCIS functions to automatically isolate the steam supply line.

In this event, PCIS functioned as designed when the spurious trip signal was introduced. That is, inboard PCIS valve 1E41-F002 automatically closed. Had a break occurred in the steam line at the time of this event, the valve would have closed as designed, isolating the line from the nuclear steam supply system.

During the five minute time frame when HPCI was isolated, had a design basis accident occurred involving a break in the nuclear steam supply system that did not result in rapid depressurization of the reactor vessel, HPCI could not have automatically initiated. However, ADS, the LPCI system, and the CS system were operable and would have automatically functioned to provide adequate core cooling. In addition, if the HPCI system had been needed during a design basis event, a licensed operator could relatively quickly ascertain the spurious nature of the HPCI isolation using annunciator response procedures and Main Control Room instrumentation. Subsequent reset of the isolation using a keylock switch on panel 1H11-P601 in the Main Control Room and opening of valve 1E41-F002 using a Main Control Room control switch would have then resulted in the initiation of the HPCI system.

Based on the above analysis, it is concluded that this event had no affect on nuclear safety. This analysis envelopes all operating conditions.

CORRECTIVE ACTIONS

The relay cover was properly installed, the isolation signal was reset, and valve 1E41-F002 was opened by 0840 CST, on 3/16/92.

To further reduce the risk of future similar events, electricians, I&C technicians, and engineering department personnel will be trained on the proper method of installing the HGA relay covers. This training will be completed by July 31, 1992.

ADDITIONAL INFORMATION

No systems other than HPCI were affected by this event.

Similar events occurring in the past two years in which an ESF actuation resulted from a relay being inadvertently mechanically actuated were addressed in the following reports:

50-321/91-02, dated 3/1/91
50-321/91-10, dated 6/14/91

These two events involved personnel inadvertently bumping relays while working in control panels. The first event did not involve a GE HGA relay. However, the second event involved a GE HGA relay with an improperly seated cover. Improper seating made the relay susceptible to actuating when bumped. Corrective actions for these events included counseling personnel on the need to exercise extreme care when working in panels, correcting situations involving the improperly seated HGA relay covers, and training personnel on the events. The 3/16/92 event could not have been prevented by the corrective actions. The design of the HGA relay cover and mounting makes it vulnerable to this type event.