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SOUTHERN COMPANY
Energy to Serve Your World℠

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Docket No. 50-321

HL-5993

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

Edwin I. Hatch Nuclear Plant - Unit 1
Licensee Event Report
Failed Relay Results in Unplanned Actuation of Engineered Safety Feature

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv), Southern Nuclear Operating Company is submitting the enclosed Licensee Event Report (LER) concerning a failed relay which resulted in an unplanned actuation of engineered safety feature.

Respectfully submitted,

Lewis Sumner

H. L. Sumner, Jr.

JL/eb

Enclosure: LER 50-321/2000-006

cc: Southern Nuclear Operating Company
Mr. P. H. Wells, Nuclear Plant General Manager
SNC Document Management (R-Type A02.001)

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NRC FORM 366 (06-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), 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. If a document used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)
Failed Relay Results in Unplanned Actuation of Engineered Safety Feature

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)
08	31	2000	2000	006	00	09	25	2000		05000
										DOCKET NUMBER(S) 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(vii)
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(ix)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)	X	50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Steven B. Tipps, Nuclear Safety and Compliance Manager, Hatch	(912) 367-7851

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	IO	RLY	T195	Yes					

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 8/31/2000 at 1600 EDT, Unit 1 was in the Run mode at a power level of 2763 CMWT (100 percent rated thermal power). At that time, Operations personnel found post-accident sampling system return isolation valve 1E41-F122 closed. This valve had been opened previously during the performance of logic system functional test procedure 34SV-SUV-027-1S, "Reactor Building Isolation LSFT." Valve 1E41-F122 is an air-operated, primary containment isolation valve (PCIV); therefore, its closure was an unplanned actuation of an engineered safety feature. Operations personnel declared the valve inoperable and initiated Required Action Sheet 1-00-205 as required by Unit 1 Technical Specifications Limiting Condition for Operation 3.6.1.3, Required Action A.1, and plant procedures.

The cause of this event was a failed solid-state relay located in relay control panel No.3, 2P33-P211. Specifically, one of the four pins on the solid-state relay broke at the base of the relay. Failure of this relay de-energized another relay, K1R2. When the coil on the K1R2 relay de-energized, its contact located in the Reactor Coolant Sample Primary Containment Isolation circuit opened. The opened contact resulted in a loss of power to the energized solenoid-operated pilot valve for PCIV valve, 1E41-F122. The PCIV valve is designed to close upon loss of power. Therefore, when the relay failed resulting in a loss of power to the solenoid circuit, the primary containment isolation valve closed as designed to its "Fail-Safe Position."

Maintenance personnel replaced the failed relay per Maintenance Work Order 1-00-02758. Operations personnel returned the valve to an operable status on 9/7/2000 at 0405 EDT following the successful completion of procedure 34SV-SUV-008-1S, "Primary Containment Isolation Valve Operability."

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL YEAR	REVISION NUMBER	
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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 (EIIS Code XX).

DESCRIPTION OF EVENT

On 8/31/2000 at 1600 EDT, Unit 1 was in the Run mode at a power level of 2763 CMWT (100 percent rated thermal power). At that time, Operations personnel found post-accident sampling system (EIIS Code IO) return isolation valve 1E41-F122 closed. Valve 1E41-F122 is an air-operated, primary containment isolation valve (EIIS Code JM); therefore, its unexpected closure was an unplanned actuation of an engineered safety feature. This valve is normally closed, but had been opened earlier in the day during the performance of logic system functional test procedure 34SV-SUV-027-1S, "Reactor Building Isolation LSFT." Specifically, the valve had been confirmed to open upon manual reset of its simulated isolation signal at the completion of the "A" trip system test and had been left open as required by the procedure until all testing was completed. Prior to the completion of the logic system functional test, and before Operations personnel could return valve 1E41-F122 to its normal position of closed, they unexpectedly found it closed.

Upon discovery that valve 1E41-F122 was closed, Operations personnel declared it inoperable and initiated Required Action Sheet 1-00-205 as required by Unit 1 Technical Specifications Limiting Condition for Operation 3.6.1.3, Required Action A.1, and plant procedures.

CAUSE OF EVENT

The cause of this event was a failed relay. One of the four pins on a solid-state relay broke at the base of the relay. This nonsafety-related relay, although not part of the primary containment isolation system (EIIS Code JM), provides power to a relay that has a normally-open contact in the power supply circuit to the solenoid coil for the pilot valve associated with valve 1E41-F122. Energizing the latter relay closes the contact powering the solenoid coil; the pilot valve shifts position to allow air to the operator on valve 1E41-F122. The air pressure then opens the valve, compressing a spring internal to the operator. When the solid-state relay pin broke, the power to the second relay coil was lost. The latter relay contact then opened causing a loss of power to the energized coil. The pilot valve shifted to the de-energized position, venting air from the operator. When the air pressure was vented, the spring closed valve 1E41-F122 as designed.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(iv) because an unplanned actuation of an engineered safety feature occurred. Specifically, one inboard Group 2 primary containment isolation valve, part of the primary containment isolation system, closed in response to a loss of power caused by a failed nonsafety-related relay.

The primary containment isolation system, an engineering safety feature system, is designed to close valves in pipes penetrating the containment boundary when the possibility of a leak is indicated. The primary containment isolation valves are divided into several groups, each group sharing similar functions. Group 2 primary containment isolation valves are those which communicate with the primary containment atmosphere but typically not with the reactor coolant system. In general, primary containment isolation valves are controlled by logic whose design is "fail-safe"; that is, the valves are maintained in the open position by a continuously energized circuit and automatically shift to their safe or emergency configuration upon loss of power.

In this event, a relay failed resulting in loss of power to the solenoid coil on the pilot valve for valve 1E41-F122. The latter valve then closed, that is, went to its accident position, as designed. Thus, valve 1E41-F122 would have been in its required position, and its associated penetration isolated, should an actual isolation signal have been received. Based on this, it is concluded that this event had no adverse impact on nuclear safety. This analysis applies to all operating conditions.

CORRECTIVE ACTIONS

Maintenance personnel replaced the failed relay per Maintenance Work Order 1-00-02758. Operations personnel returned valve 1E41-F122 to an operable status on 9/7/2000 at 0405 EDT following the successful completion of surveillance procedure 34SV-SUV-008-1S, "Primary Containment Isolation Valve Operability."

ADDITIONAL INFORMATION

1. Other Systems Affected: No systems other than those mentioned in this report were affected by this event.

2. Failed Components Information:

   Master Parts List Number: 2P33-P211
   Manufacturer: Theta
   Model Number: OFA2405-2
   Type: Solid-State Relay
   Manufacturer Code: T195

   EIIS System Code: IO
   Reportable to EPIX: Yes
   Root Cause Code: X
   EIIS Component Code: RLY

3. Commitments: No permanent commitments are created as a result of this report.

4. Previous Similar Events: Only one Licensee Event Report has been submitted in the past two years in which a failed relay resulted in unexpected engineered safety feature system actuations. This event was described in LER 50-321/2000-003, dated 2/22/2000. Corrective actions for this previous similar event included replacing the blown fuse, replacing the failed relay coil, and reviewing the predictive failure program for relay coils. These actions could not have prevented this event because the relays in the two events and their manner of failure were different.