Lewis Sumner
Vice President
Hatch Project Support

Southern Nuclear Operating Company, Inc.
40 Inverness Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.7279
Fax 205.992.0341

SOUTHERN COMPANY
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Docket No. 50-366

HL-5908

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

Edwin I. Hatch Nuclear Plant - Unit 2
Licensee Event Report
High Pressure Coolant Injection System Inoperable
Due to Water in Lubricating Oil System

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(v), Southern Nuclear Operating Company is submitting the enclosed Licensee Event Report (LER) concerning the High Pressure Coolant Injection System being inoperable due to water in the lubricating oil system.

Respectfully submitted,

Lewis Sumner

H. L. Sumner, Jr.

JAW/eb

Enclosure: LER 50-366/2000-001

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

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. N. Olshan, Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Mr. L. A. Reyes, Regional Administrator
Mr. J. T. Munday, Senior Resident Inspector - Hatch

IE22

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

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.

LICENSEE EVENT REPORT (LER)

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

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TITLE (4)
High Pressure Coolant Injection System Inoperable Due to Water in Lubricating Oil System

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) 05000
02	27	2000	2000	001	00	03	27	2000		DOCKET NUMBER(S) 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	98

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)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)	X	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

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 02/27/2000 at 1615 EST, Unit 2 was in the Run mode at a power level of approximately 2708 CMWT (98 percent rated thermal power). At that time, the High Pressure Coolant Injection (HPCI) system was declared inoperable after water was discovered in its lubricating oil. During the performance of procedure 34SV-E41-002-2S, "HPCI Pump Operability," personnel noted water spraying from the area of the main pump outboard mechanical seal. As a result, personnel shut down the HPCI pump. Maintenance personnel subsequently found the seal cavity full of water and its drain line clogged. Personnel unclogged the line, allowing the water to drain. When personnel returned the HPCI system to standby status, they noted the oil level was above the high level mark. Personnel obtained an oil sample from the bottom of the oil reservoir and found the sample to contain approximately fourteen percent water. Operations personnel declared the HPCI system inoperable at 1615 EST upon being notified of the water in the oil.

This event was the result of water standing in the outboard mechanical seal cavity caused by a clogged drain line. The water, coming from a small leak in the mechanical seal, apparently entered the oil system by flowing past the thrust bearing oil deflector. The deflector forms one of the seal cavity walls and is not designed to keep standing water out of the bearing housing. The oil system was drained and cleaned, filters were replaced, and new oil was added to the reservoir. The HPCI system was returned to operable status on 02/28/2000 at 1714 EST after successful performance of procedure 34SV-E41-002-2S.

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 02/27/2000 at 1615 EST, Unit 2 was in the Run mode at a power level of approximately 2708 CMWT (98 percent rated thermal power). At that time, the High Pressure Coolant Injection (HPCI, EIIS Code BJ) system was declared inoperable after water was discovered in the system's lubricating oil reservoir. The water was found as a result of observations made during a routine pump operability test.

At approximately 1312 EST, during the routine periodic performance of surveillance procedure 34SV-E41-002-2S, "HPCI Pump Operability," personnel noted water spraying from the area of the main pump outboard mechanical seal. As a result of the report of water coming from the mechanical seal area, operations personnel shut down the HPCI pump at 1313 EST. Maintenance personnel subsequently found the main pump outboard mechanical seal cavity full of water and the seal cavity drain line clogged. The rotating pump shaft and mechanical seal apparently slung the standing water from the seal cavity, leading to the observation of water spraying from this area. Personnel unclogged the drain line, allowing the water in the cavity to drain.

When personnel returned the HPCI system to standby status per procedure 34SO-E41-001-2S, "High Pressure Coolant Injection (HPCI) System," they noted that the lubricating oil level was above the high level mark on the reservoir sightglass. Personnel obtained an oil sample from the bottom of the lubricating oil reservoir and found the sample contained approximately fourteen percent water. Operations personnel declared the HPCI system inoperable at 1615 EST upon being notified of the presence of water in the lubricating oil.

CAUSE OF EVENT

This event was the result of water standing in the main pump outboard mechanical seal cavity. The water, coming from a small leak in the mechanical seal, remained in the cavity because the cavity drain line was clogged. Water apparently entered the lubricating oil system by flowing past the thrust bearing oil deflector. The oil deflector forms one of the mechanical seal cavity walls and is designed to keep oil in the bearing housing. However, it is not designed to keep standing water out of the housing. Consequently, it appears the water trapped in the mechanical seal cavity by the clogged drain line flowed past the oil deflector and entered the lubricating oil system. How and when the cavity drain line became clogged were not determined.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(v) because an event occurred in which the HPCI system, a single train safety system, was rendered inoperable.

The HPCI system consists of a steam turbine-driven pump and the necessary piping and valves to transfer water from the suppression pool or the condensate storage tank (EIIS Code KA) to the reactor vessel. The system is designed to inject water to the reactor vessel over a range of reactor pressures from 160 psig through full rated pressure. The HPCI system starts and injects automatically whenever low reactor water level or high drywell pressure indicates the possibility of an abnormal loss of coolant inventory. The HPCI system, in particular, is designed to replace lost reactor coolant inventory in cases where a small line break occurs which does not result in full depressurization of the reactor vessel.

The backup for the HPCI system is the Automatic Depressurization System (ADS) together with two low pressure injection systems: the Low Pressure Coolant Injection (LPCI, EIIS Code BO) system and the Core Spray (EIIS Code BM) system. The Core Spray system is composed of two independent, redundant, 100 percent capacity subsystems. Each subsystem consists of a motor driven pump, its own dedicated spray sparger located above the core, and piping and valves to transfer water from the suppression pool to the sparger. Upon receipt of an initiation signal, the Core Spray pumps in both subsystems start. Once ADS has reduced reactor pressure sufficiently, Core Spray system flow begins.

LPCI is an operating mode of the Residual Heat Removal (EIIS Code BO) system. There are two independent, redundant, 100 percent capacity LPCI subsystems, each consisting of two motor driven pumps and piping and valves to transfer water from the suppression pool to the reactor vessel. Upon receipt of an initiation signal, all four LPCI pumps automatically start. Once ADS has reduced reactor pressure sufficiently, the LPCI flow to the reactor vessel begins. The divisionally separated initiation logic systems for LPCI and Core Spray incorporate "crossover" circuitry allowing each division to trigger an initiation of the other division. With this design, any one operable division of logic can produce a full actuation in both divisions of all the pumps and valves necessary for injection to the reactor vessel.

In this event, the HPCI system was declared inoperable after water was discovered in its lubricating oil system. During the time the HPCI system was inoperable, however, the Reactor Core Isolation Cooling (RCIC, EIIS Code BN) system was available to inject high pressure water into the reactor vessel. Although not an emergency core cooling system, the RCIC system is designed, maintained, and tested to the same standards and requirements as the HPCI system and therefore should reliably inject water into the reactor vessel when required. If a break exceeded the capacity of the RCIC system (400 gallons per minute), the ADS was available to depressurize the reactor vessel to the point that either the Core Spray or LPCI systems could have been used to provide water to the reactor core. The capacity of one loop of the Core Spray system is equal to that of the HPCI system (4250 gallons per minute each); the capacity of one loop of the LPCI system is approximately three times that of the HPCI system. Therefore, any one of the four loops of the low pressure injection systems would have provided sufficient injection capacity for a small break loss-of-coolant accident.

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 and operating modes in which a loss-of-coolant accident is postulated to occur.

CORRECTIVE ACTIONS

The clogged seal cavity drain line was cleared, allowing the water in the cavity to drain. The lubricating oil system was drained and cleaned; oil filters were replaced; and new lubricating oil was added to the reservoir per Maintenance Work Order 2-00-0459. Also, the lubricating oil cooler, which uses HPCI booster pump discharge water as its cooling medium, was checked for leaks while the reservoir was drained and the system shutdown. No leaks were found.

The oil reservoir was checked for level changes during and following the HPCI system test performed per procedure 34SV-E41-002-2S on 02/28/2000. No level increase was noted. Moreover, the lubricating oil in the reservoir sightglass was checked for the presence of water, that is, a milky appearance, during and following the HPCI system test. No evidence of water was noted. Therefore, the HPCI system was returned to operable status on 02/28/2000 at 1714 EST following the successful completion of procedure 34SV-E41-002-2S and a lack of any indication of water in the lubricating oil system.

As verification, additional oil samples were obtained from the bottom and middle of the HPCI system lubricating oil reservoir on 02/29/2000. Maintenance Engineering personnel analyzed these samples and found they contained only approximately 0.1 percent water. Generally, less than 0.5 percent water content is considered acceptable for new oil.

The outboard mechanical seal presently is leaking at an estimated 20 to 30 drops per minute, a rate that does not adversely affect the operability of the HPCI system. It will be repaired per Maintenance Work Order 2-00-0465. In the interim, the cleared drain line should prevent seal leakage from entering the lubricating oil system. Routine checks of the reservoir sightglass will confirm that no water has entered the lubricating oil system.

A requirement to clean the pump cavity drain lines will be added to the Unit 1 and Unit 2 HPCI and RCIC pump 18-month preventive maintenance procedures.

ADDITIONAL INFORMATION

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

Failed Components Information: No failed components directly caused or resulted from this event.

Commitment Information: This report does not create any permanent licensing commitments.

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

Previous Similar Events: Previous similar events in the last two years in which the HPCI system was inoperable were reported in Licensee Event Reports 50-321/1999-002, dated 05/24/1999, and 50-321/2000-002, dated 02/25/2000. In the first event, the HPCI system was rendered inoperable when a barometric condenser vacuum problem prevented the completion of a surveillance test within the time allowed by the Technical Specifications. The vacuum problem prevented the then recently installed condensate pump from pumping sufficient water to control level in the barometric condenser. In the second event, the HPCI system was rendered inoperable when it failed to trip on high water level following an automatic reactor shutdown. Corrective actions for these previous events could not have prevented this event because the events and their causes were completely unrelated to this event.