Dennis R. Madison
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SOUTHERN COMPANY

September 30, 2010

Docket Nos.: 50-321; 50-366

NL-10-1910

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Edwin I. Hatch Nuclear Plant
Licensee Event Report
Inability of Redundant Main Control Room Air Conditioner
to Auto-Start for Pressurization Mode

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(i)(B), Southern Nuclear Operating Company is submitting the enclosed Licensee Event Report (LER) concerning the inability of redundant main control room air conditioner to auto-start for pressurization mode.

This letter contains no NRC commitments. If you have any questions, please contact Steven Tipps at (912) 537-5880.

Respectfully submitted,

D. R. Madison
Vice President – Hatch

DRM/sbt

Enclosures: LER 1-2010-005
cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Ms. P. M. Marino, Vice President – Engineering
RTYPE: CHA02.004

U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. R. E. Martin, NRR Project Manager – Hatch
Mr. E. D. Morris, Senior Resident Inspector – Hatch
Mr. P. G. Boyle, NRR Project Manager

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means 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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Edwin I. Hatch Nuclear Plant – Unit 1	05000-321	1 of 5

4. TITLE

Inability of Redundant Main Control Room Air Conditioner to Auto-Start for Pressurization Mode

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Edwin I. Hatch NP – Unit 2	05000-366
08	03	2010	2010	- 005 -	00	09	30	2010	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

1

10. POWER LEVEL

99.8 %

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Steven Tipps, Principal Engineer - Licensing	912 - 537- 5880

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	VI	CDU	V030	Yes					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On August 3, 2010, Unit 1 and 2 were operating at approximately 2800 Mwth, 99.84% power and 99.7% power, respectively. At approximately 1015 EDT, the 'B' main control room (MCR) condensing unit compressor 1Z41-B008B tripped due to high compressor discharge pressure when placed into service to gather condensing unit operating parameters for further evaluation of the system. Since the cause for the condensing unit trip was unknown, Technical Specification 3.7.5 required action statement (RAS) was entered for having one MCR air conditioner out of service. Since one MCR air handling unit (AHU) was in operation, the LCO for the main control room environmental control (MCREC) Technical Specification 3.7.4 was not met and the Tech Spec RAS was subsequently entered when the determination was made that the "as found" condition warranted this action. A second start attempt later that night resulted in another trip of the 'B' AHU from a similar cause. The high pressure cut-out switch was reset and the 'B' AHU automatically restarted and remained in operation.

The cause of the event was less than adequate design in that the chiller could not dissipate the unusually high ambient heat load on the refrigeration cycle following startup from standby conditions. Extreme outside environmental conditions resulted in the chiller area also being hot, resulting in an unusually high ambient heat load on the standby chiller. Corrective actions included replacement of the associated fouled piping, calibration of the high pressure cut-out switch and completion of an immediate determination of operability and operating order to maintain two AHUs in service at all times.

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 August 3, 2010, with Unit 1 and 2 operating at approximately 2800 Mwth, at 99.84% and 99.7% rated thermal power (RTP), respectively, at approximately 1015 EDT, the 1Z41-B008B unit (EIIS Code VI) was placed in service in order to gather condensing unit operating parameters for further evaluation of the system design in support of determining if operation of the condensing unit above 95°F could be supported. The 'B' MCR AHU tripped immediately after it was placed into service due to high compressor discharge pressure. Since the cause for the condensing unit trip was unknown, Technical Specification 3.7.5 required action statement (RAS) was entered for having one MCR air conditioner out of service. Since one MCR air handling unit (AHU) was in operation during the evolution, Technical Specification LCO 3.7.4 for the main control room environmental control (MCREC) Technical Specification 3.7.4 was not met, and the Tech Spec RAS was subsequently entered when the determination was made that the "as found" condition warranted this action. A second start attempt later that night resulted in another trip of the 'B' condensing unit from a similar cause. In this case the high pressure cut-out switch was immediately reset. Once reset the 'B' condensing unit immediately restarted automatically and remained in operation which demonstrated that once the hot water in the inlet line and condensing unit was flushed out, the air conditioner would continue to function as designed.

CAUSE OF EVENT

The cause of the event was less than adequate design in that the chiller could not dissipate the unusually high ambient heat load on the refrigeration cycle following startup from standby conditions. Extreme outside environmental conditions resulted in the chiller area also being hot, resulting in an unusually high ambient heat load on the standby chiller. Specifically, chiller 1Z41-B008B is normally maintained in "standby" and will auto-start upon trip of the other operating air conditioner. While in "standby" the water in the cooling water piping and condenser tubes and the refrigerant in the refrigeration cycle is not circulating and is subjected to heating by the elevated ambient temperature conditions that exist on the control room roof during summer conditions. The air temperature at the time of the event on the control room roof was well over 100 degrees. Flow data taken immediately after the trip, and prior to replacing the pipe, showed the flow to be approximately 105 gpm. According to design documentation the air conditioner will operate sufficiently with a condenser water flow of 100 gpm at 95°F. The design appears to have only accounted for the steady state condition and failed to account for the startup condition in which the stagnant condenser water is much greater than 95°F.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable under 10 CFR 50.73(a)(2)(i)(B), which requires the report of any operation or condition which was prohibited by the plant's Technical Specifications (Tech Specs) in that a condition existed for a time longer than permitted by the Technical Specifications (i.e., greater than the allowed completion time even if the condition was not discovered until after the allowable time had elapsed and the condition was rectified immediately upon discovery). If equipment history and the cause of the failure indicate that the discrepancy existed previously, the condition would be reportable. The stagnant cooling water in the plant service water (PSW, EIIS Code BI) cooling supply lines in the condenser for the 'B' air conditioner is normally at the same temperature as the ambient temperature on the control room roof during normal operation. The 'B' AHU is normally maintained in the "Standby" configuration which precludes circulation of the water in this line. During summer time conditions this temperature is typically over the 95°F design limit, which means the 'B' was susceptible to trip following an automatic start for a time frame that is longer than the Tech Spec 3.7.4, Condition B, RAS completion time for this component. Since the stagnant water in the cooling line was at elevated temperatures above 95°F during the summer months, the discovered condition was determined to have existed previously based on the cause of failure.

The main control room air conditioning is a system that is placed into service manually. The normal configuration of AHU operation is to have the 'A' AHU in operation with the 'B' AHU in standby. Should the 'A' AHU trip or fail unexpectedly, the 'B' AHU could be restarted after the initial automatic start and trip, allowing it to run continuously to perform its function. Until the AHU is restarted, entry into Tech Spec 3.7.5, Condition B, is required with one MCR AHU out of service. Based on this information the main control room air conditioning cooling function would continue to be maintained despite the "as found" condition that would cause the 'B' AHU to initially trip after starting.

The automatic starting of the 'B' AHU also affects the operability of the MCREC System which is a standby system. The main control room air-conditioners operate during normal and accident unit operation to maintain the control room environment. Upon receipt of the initiation signal(s), indicative of conditions that could result in radiation exposure to control room personnel; the MCREC System automatically switches to the pressurization mode of operation by activation of the filter unit to prevent infiltration of contaminated air into the control room and cleanup of the outside air for pressurization. At least one AHU must be running or capable of automatically starting and running in order to achieve the required pressurization. A system of dampers isolates the control room, and a part of the recirculated air is routed through either of the two filter subsystems. Outside air is taken in at the normal ventilation intake and is mixed with the recirculated air before being passed through HEPA and charcoal adsorber filter subsystems for removal of airborne radioactive particles and gaseous iodine. The MCREC System is designed to maintain habitability of the control room for a 30 day continuous occupancy after a Design Basis Accident without exceeding 5 rem whole body dose or its equivalent to any part of the body. A single MCREC filter unit will pressurize the control room to a positive pressure of >/= 0.1 inches water gauge to prevent infiltration of contaminated air from surrounding buildings and cleanup of the outside air for pressurization.

In the event of a condition requiring the MCREC system to go into its pressurization mode, the 'A' AHU would have been running and in the event of a condition that required the MCREC to go into the pressurization mode the required pressurization to a positive pressure of >/= 0.1 inches water gauge would continue to be

accomplished. If the 'A' AHU failed for whatever reason, the 'B' AHU would have automatically started and tripped thereby affecting the redundancy of this function. Operations procedures would have had the operator check to see if the 'B' AHU had started and if it was not running would be manually restarted or the 'C' AHU would be placed into service in response to the alarmed condition caused by low differential pressure between the control room and the turbine deck. The 'B' or 'C' AHU would then operate, restore the required differential pressure and continue to operate for the required mission time of 30 days.

Despite the "as found" condition involving the excessive temperature of the cooling water for AHUs that are either in the "off" or "standby" position, the 'B' AHU could be manually restarted by resetting the high pressure cutout switch. Since most of the hot leg of water would have been flushed through the AHU during the initial start prior to its trip, the AHU could be manually re-started and run normally for its required mission time of 30 days. Since the MCR air conditioners are manually placed into service, the capability for control room cooling was retained prior to discovery of this condition and improved provision was made for it following its discovery.

The MCREC system would function as required to pressurize the main control room and upon loss of the 'A' AHU would not be able to automatically pressurize the control room boundary. However, as previously described operator actions required by procedure would be taken to restore the 'B' or start the 'C' AHU. The ability to manually start the needed MCR air conditioner was retained during this event. No design basis accident (DBA) event condition occurred prior to the discovery of this condition that would have required automatic initiation of the MCREC system to function in the pressurization mode.

Based on this information the this discovered condition is considered to have low safety significance, since the required specified safety functions would have occurred as required or restored in a relatively short time frame.

CORRECTIVE ACTIONS

The corrective actions taken included: replacing the inlet cooling water piping for the 'B' AHU 1Z41-B008B, calibrating the pressure switch that performs a trip function on high head pressure and inspecting valve 1P41-F1247. Additionally, an Operating Order was developed and procedures revised to address the manual actions for restarting a chiller following a trip of the nature addressed in this LER. Also, operating limitations were established to ensure that the AHU's are operated in a configuration to ensure compliance with the Technical Specifications. Planned corrective actions include completing an engineering review to determine design operating limitations for starting a chiller in high ambient conditions and from that evaluation develop and implement a design change as required to resolve this problem.

ADDITIONAL INFORMATION

SIMILAR EVENTS:

LER 1-2009-006, "Main Control Room Air Conditioner Due to Inoperable Solenoid Valve," identified a condition involving failed solenoid valves in the PSW cooling lines going to a non-safety related air conditioner. The failed solenoid valves would not isolate this non-safety related line which would upon failure in a design basis accident route some of the cooling water needed for the MCR air conditioning system for an

air conditioner aligned to Unit 1 PSW supply. An Engineering analysis was performed that demonstrated that there would not be a loss of function in the event that such a condition occurred. The line was isolated which restored the normal flow to the MCR air conditioner. The resulting corrective actions were not associated with the ability of a MCR AHU starting and running and are not relevant to the condition being reported in this LER.

LER 1-2010-002, "Degraded Plant Service Water Cooling to Main Control Room Air Conditioner Results in Loss of Function" identified a condition involving the degradation of cooling water lines to the MCR air conditioners. The degraded condition of the PSW cooling to the MCR air conditioners was similar in nature to the condition of the inlet cooling water line to the 'B' AHU reported in the current LER. The corrective actions from the previous LER involved cleaning of a portion of associated piping, but cleaning of the inlet line for the 'B' AHU was not performed at that time. Due to the "as found" condition of the cooling water line going to the 'B' AHU, cleaning of the line would not have precluded the condition, since the impact the temperature of the stagnant water would have on the operation of the 'B' AHU was not known before running the system in its current configuration to take operating data.