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Georgia Power

the southern electric system

C. K. McCoy
Vice President, Nuclear
Vogtle Project

June 17, 1994

LCV-0370-A

Docket No. 50-424

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

Ladies and Gentlemen:

**VOGTLE ELECTRIC GENERATING PLANT
REVISION TO LICENSEE EVENT REPORT
CLOSED DAMPERS RENDER TWO TRAINS OF HVAC INOPERABLE**

Georgia Power Company submits the enclosed report as a revision to Licensee Event Report dated May 26, 1994, related to an event which was initially reported to the NRC per 10 CFR 50.72 (b)(2)(iii) on April 26, 1994, and discussed with the NRC at an Enforcement Conference on June 2, 1994.

Sincerely,

C.K. McCoy
C. K. McCoy

CKM/AFS

Enclosure: LER 1-94-003-1

xc: Georgia Power Company
Mr. J. B. Beasley, Jr.
Mr. M. Sheibani
NORMS

U. S. Nuclear Regulatory Commission
Mr. S. D. Ebnetter, Regional Administrator
Mr. D. S. Hood, Licensing Project Manager
Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB7714), 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.

FACILITY NAME (1)

Vogtle Electric Generating Plant - Unit 1

DOCKET NUMBER (2)

050004241 OF 7

PAGE (3)

TITLE (4)

CLOSED DAMPERS RENDER TWO TRAINS OF HVAC INOPERABLE

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)																													
04	26	94	94	003	01	06	17	94		050004241																													
<p>THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 7. (Check one or more of the following) (11)</p> <table border="1"> <tr> <td>OPERATING MODE (9)</td> <td>20.402(b)</td> <td>20.405(c)</td> <td>50.73(a)(2)(iv)</td> <td>73.71(b)</td> </tr> <tr> <td rowspan="2">POWER LEVEL (10)</td> <td>20.405(a)(1)(i)</td> <td>50.36(c)(1)</td> <td>X 50.73(a)(2)(v)</td> <td>73.71(c)</td> </tr> <tr> <td>20.405(a)(1)(ii)</td> <td>50.36(c)(2)</td> <td>50.73(a)(2)(vii)</td> <td></td> </tr> <tr> <td></td> <td>20.405(a)(1)(iii)</td> <td>X 50.73(a)(2)(i)</td> <td>50.73(a)(2)(viii)(A)</td> <td></td> </tr> <tr> <td></td> <td>20.405(a)(1)(iv)</td> <td>50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)(B)</td> <td></td> </tr> <tr> <td></td> <td>20.405(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(x)</td> <td></td> </tr> </table>											OPERATING MODE (9)	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	POWER LEVEL (10)	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)			20.405(a)(1)(iii)	X 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)	
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	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)																																				

LICENSEE CONTACT FOR THIS LER (12)

NAME

Mehdi Sheibani, Nuclear Safety and Compliance

TELEPHONE NUMBER (include area code)

706 826-3209

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

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

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) (E)

X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)

On April 24, 1994, exhaust dampers in both trains of the piping penetration area filtration and exhaust system (PPAFES) were found to be closed due to circuit breakers being deenergized while a design change was being performed on another air filtration system that utilized the same circuit breakers. The exhaust dampers were reenergized and restored to service. Concurrently, an initial determination was made, based on test results, that this condition had not rendered the system inoperable. On April 26, 1994, a further engineering evaluation determined that having the exhaust dampers closed would limit the ability of the PPAFES to control radioactive releases in a post-LOCA scenario.

The cause of this event was drawing discrepancies in a single line diagram and an electrical load list. Also, cognitive personnel errors and lack of attention to detail resulted in inadequate reviews of the circuit breaker clearances associated with the design change. Additionally, surveillance guidance for verification of damper position was unclear. Furthermore, subsequent personnel errors occurred which delayed the identification and resolution of the problem. The single line diagram and electrical load list were corrected. Personnel were counseled and additional training will be conducted to emphasize the importance of clearance reviews for proper configuration control.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB7714), 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.

FACILITY NAME (1) Vogtle Electric Generating Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 2 4	LER NUMBER (6)			PAGE (3)	
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TEXT (if more space is required, use additional copies of NRC Form 365A)(17)

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(v) because a condition existed that alone could have prevented the fulfillment of a safety function of a system needed to control the release of radioactive material. It is also required per 10 CFR 50.73 (a)(2)(i) because the unit operated in a condition prohibited by the Technical Specification (TS) when a system was inoperable for a period of time longer than that allowed by the action statement.

B. UNIT STATUS AT TIME OF EVENT

At the time of this event, Unit 1 was operating in Mode 1 (power operations) at 100 percent of rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

The Unit 2 electrical penetration filtration system had never been installed and as part of a design change to abandon the Unit 1 system, on February 28, 1994, and March 1, 1994, personnel installed clearances by opening the applicable circuit breakers. These clearances removed power to several dampers in this filtration system. However, power was also unknowingly removed to piping penetration area filtration and exhaust system (PPAFES) train A and B exhaust dampers, 1PV-2550B and 1PV-2551B, because they share circuit breakers with the system being abandoned. This left the PPAFES exhaust dampers in their closed positions and inoperable. These exhaust dampers open to preset positions to maintain negative pressure during PPAFES operation. Thus, the PPAFES was limited in its ability to control the release of radioactive materials from the piping penetration rooms, had it become necessary to do so in a post-LOCA scenario.

TS surveillances were performed for the Train A PPAFES on March 15, 1994, and April 11, 1994, and for the Train B PPAFES on March 28, 1994. Personnel noted that the position indication lights, used for verifying modulation of dampers 1PV-2550B and 1PV-2551B, were not illuminated during these surveillances. During the March 28, 1994, surveillance, an investigation of the apparent position indication problem was initiated, but was not pursued due to shift turnover. Since the acceptance criteria for the surveillance was met, the surveillance was signed off as satisfactory. A more thorough and complete investigation was conducted during the April 11, 1994, surveillance.

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Visual indication of 1PV-2550B valve linkage led the personnel involved to believe that the valve had actually moved to its preset demanded position, and a work order was initiated to effect repairs of the position indication. On April 20, 1994, an investigation by an electrician, per the work order, revealed that both the indicator lights and the dampers were removed from service because the power had been removed. The unit shift supervisor (USS) was notified that the position indication was lost due to the breakers being open. However, he did not realize that opening the breakers had also removed power to the dampers. On April 24, 1994, during work order closeout, another USS recognized the impact on the PPAFES. While reviewing the clearance for modification to reenergize the exhaust dampers, PPAFES testing was performed to determine operability. System flows, differential pressures, and alarm indications all indicated normal, with the only abnormality being the indication for the exhaust dampers. After discussion of the test results with the system engineering supervisor and plant management, an initial determination was made that this condition had not rendered the system inoperable. However, plant management requested a design review of this condition to determine the complete impact to the PPAFES. Power was restored and the system returned to service.

On April 25, 1994, the design engineering staff began to evaluate the effect of the deenergized dampers on the operability of the system and on April 26, 1994, it was determined that PPAFES had been rendered inoperable and that the safety function of the system had been degraded by the dampers being deenergized while in their closed positions. A four-hour non-emergency notification was made to the NRC Operations Center per 10 CFR 50.72 (b)(2)(iii) because a condition existed that alone could have prevented the fulfillment of a safety function of a system needed to control the release of radioactive material.

A broadness review initially found that similar events had occurred when damper circuit breakers were deenergized for one train of PPAFES on three other occasions. Further review of clearances has shown only one occasion when one train of PPAFES had been rendered inoperable for a period of time longer than that allowed by the TS. The Unit 1 train A breaker was deenergized from October 28, 1988, to November 9, 1988.

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D. CAUSE OF EVENT

The causes of this event were:

- 1) Drawing discrepancies
- 2) Inadequate review of circuit breaker clearances
- 3) Surveillance guidance for dampers was unclear
- 4) Failure to discover event earlier

These causes are detailed as follows:

1) A single line diagram and electrical load list failed to specifically identify by equipment number that the train A exhaust damper was a device being powered from the affected circuit breaker. The single line diagram and electrical load list identified other dampers and an HVAC panel as devices being fed from the circuit breaker which was deenergized on February 28, 1994. However, the train A exhaust damper was also being fed from this circuit breaker via the HVAC panel.

2) Cognitive personnel error and lack of attention to detail by the operations work planner and the support shift supervisor (SSS) resulted in an inadequate review of the circuit breaker clearance associated with the design change on the train B components. The operations work planner's and SSS's reviews did not find the PPAFES train A exhaust damper on the appropriate breaker drawing or its respective load list because it was not listed on these documents. The PPAFES train B exhaust damper was shown on its respective drawing and load list, but these were not adequately reviewed since the train A and train B clearances were being developed at the same time.

3) The purpose of the monthly surveillance is to operate the system to prevent moisture buildup on the filter. This monthly surveillance contains no acceptance criteria related to proper exhaust damper operation, and procedural guidance for checking status of the exhaust damper was unclear. However, the monthly surveillance did provide opportunities to identify the clearance error.

4) Subsequent personnel errors committed during performance of surveillance testing and investigation of the damper position indication discrepancy prevented the early detection and correction of the clearance error.

The occurrence of these cognitive personnel errors by the Georgia Power Company personnel involved was not the result of any unusual characteristics of the work location.

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E. ANALYSIS OF EVENT

The functions of the PPAFES are to maintain a negative pressure boundary on the piping penetration area rooms and to filter the exhaust from those areas. Safety Evaluation Report dated July 9, 1992, assumes iodine leakage from the piping penetration rooms and emergency core cooling system (ECCS) equipment to both offsite and control room locations during post-LOCA conditions. Therefore, the control room and offsite dose analyses are potentially affected by the degradation of this system caused by the inoperable exhaust dampers.

Based upon the latest dose analysis, had the ECCS leakage risen to the design basis analyzed value of 2 gpm with the PPAFES exhaust dampers closed, the offsite dose would have remained within the 10 CFR 100 limits, and the control room dose would also have remained within the General Design Criteria 19 acceptance criteria.

Several other factors also existed that would have mitigated the consequences of this scenario:

- 1) The latest surveillance value for ECCS leakage, based on the requirements of TS 6.7.4 and taken during the last Unit 1 refueling outage, indicated the leakage was less than 0.1 gpm. This would result in the expected source term being significantly less than the 2 gpm assumed in the design basis dose analysis.

Although the PPAFES exhaust dampers were inoperable and would have resulted in an increase of radioactivity release, the filter and recirculation function of the PPAFES was operable and would have filtered out a majority of the airborne radiation resulting from ECCS leakage.

Combining these two conditions of a low ECCS leakage value and the operability of the recirculation/filtration function of PPAFES being unaffected by the inoperability of the exhaust dampers, results in maintaining the expected source term within the design basis dose analysis value.

- 2) ECCS leakage which occurred would enter the auxiliary building in interior rooms below grade, and have to diffuse through several rooms or be transported via the filter system to rooms bordering on the exterior of the building prior to release. After filtration, the expected discharge flow of 2700 cfm would have been returned with the recirculation flow of 11760 cfm to the various ECCS rooms. These rooms are typically provided with sealed

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penetrations and solid doors (not wire mesh) maintained closed for flood protection, radiation protection, fire protection, etc., and would provide a substantial barrier to radioactivity release. Therefore, the majority of the leakage would be processed through the PPAFES filters, perhaps being recirculated several times, prior to release. The leakage which bypasses the filters would have a long winding pathway to follow prior to exiting the auxiliary building and would be subject to natural removal processes along the way, such as settling and plateout.

- 3) The PPAFES charcoal filter iodine removal efficiency is supplemented by heaters that aid in decreasing humidity. Since the expected relative humidity at the charcoal filter inlet (following the guidance of Regulatory Guide 1.52) is much closer to the controlled environment value of 70 percent than to the uncontrolled environment value of 95 percent, the PPAFES efficiency of iodine removal would be greater than that taken credit for in the design basis dose analysis. In addition, the filter actually has a bed depth of four inches as opposed to the two inches taken credit for in the accident analysis. Therefore, the recirculation/filtration which would occur would be more effective than discussed above.

Finally, there was no leakage event during the period of time involved. Based on these considerations, there was no adverse effect on plant safety or on the health and safety of the public as a result of this event.

F. CORRECTIVE ACTIONS

- 1) Power was immediately restored to the exhaust dampers on April 24, 1994, following discovery of the clearance error impact on the exhaust dampers.
- 2) The appropriate Unit 1 and Unit 2 single line diagrams and electrical load lists, which failed to identify by equipment number that the Train A PPAFES exhaust damper was being powered from the circuit breaker, have been corrected.
- 3) The individuals involved have been counseled on the significance of configuration control when preparing, reviewing, and approving clearances, and timely identification of abnormal equipment status indications.

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- 4) The PPAFES monthly surveillance and system operating procedures have been revised to provide clearer guidance on verifying exhaust damper operation. Operations surveillance procedures will be reviewed to ensure guidance that determines equipment status is clear and consistent. This review will be completed by July 15, 1994.
- 5) An initial sample review of other breakers that power similar loads revealed no further drawing problems. An additional review will be completed by September 1, 1994.
- 6) The operations work planners and system engineers have been provided training regarding this event, with emphasis on configuration control. Licensed operators will review this event in continuing training by July 15, 1994, with particular instruction on configuration control. Emphasis will also be given to utilizing a questioning attitude when test indications are not clearly understood.
- 7) An evaluation of the exhaust damper portion of the system for possible improvements is in progress and recommendations for system and procedure improvements will be made by July 1, 1994.

G. ADDITIONAL INFORMATION

- 1) Failed Components:
None
- 2) Previous Similar Events:
None
- 3) Energy Industry Identification System Code:
Emergency Core Cooling System - BJ, BP
Piping Penetration Air Filtration and Exhaust System - VA