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Vogtle Project



July 14, 1994

LCV-0400

Docket No. 50-424

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
LICENSEE EVENT REPORT
DEENERGIZED HEATERS RESULTS IN
CONTROL ROOM HVAC DEGRADATION

In accordance with the requirements of 10 CFR 50.73, Georgia Power Company submits the enclosed report related to an event which was discovered on June 19, 1994.

Sincerely,

C.K.M.'g
C. K. McCoy

CKM/AFS/gmb

Enclosure: LER 50-424/1994-004

cc: 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, NRR
Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

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| NRC FORM 366 (5-92) | | U.S. NUCLEAR REGULATORY COMMISSION | | | APPROVED OMB NO. 3150-0104 EXPIRES: 5/31/95 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 (MNB7714), 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. | | | | |
| LICENSEE EVENT REPORT (LER) | | | | | | | | | |
| FACILITY NAME (1) Vogtle Electric Generating Plant - Unit 1 | | | | | DOCKET NUMBER (2) 5 0 0 0 4 2 4 1 | | PAGE (3) 1 OF 4 | | |
| TITLE (4) DEENERGIZED HEATERS RESULTS IN CONTROL ROOM HVAC DEGRADATION | | | | | | | | | |
| 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 |
| 06 | 19 | 94 | 94 | 004 | 00 | 07 | 14 | 94 | VEGP - UNIT 2 |
| | | | | | | | | | DOCKET NUMBER(5) |
| | | | | | | | | | 0 5 0 0 0 4 2 5 |
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| OPERATING MODE (9) 1 | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 7: (Check one or more of the following) (11) | | | | | | | |
| | | 20.402(b) | | 20.405(c) | | 50.73(a)(2)(iv) | | 73.71(b) | |
| POWER LEVEL (10) 1 0 0 | | 20.405(a)(1)(i) | | 50.36(c)(1) | | 50.73(a)(2)(v) | | 73.71(c) | |
| | | 20.405(a)(1)(ii) | | 50.36(c)(2) | | 50.73(a)(2)(vi) | | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | |
| | | 20.405(a)(1)(iii) | | X 50.73(a)(2)(i) | | 50.73(a)(2)(vii)(A) | | | |
| | | 20.405(a)(1)(iv) | | 50.73(a)(2)(ii) | | 50.73(a)(2)(vii)(B) | | | |
| | | 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) 7 0 6 8 2 6 - 3 2 0 9 | | | |
| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | |
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPD | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPD |
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| | | | | | | | | | |
| 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) | | | | | | | | | |
| <p>On June 19, 1994, a plant operator noticed that a control room emergency filtration system (CREFS) heater reset button was not lit. This led to the discovery that filtration heaters for three of four trains of CREFS were deenergized. The heaters' power source control relays were reset, thereby restoring power to the heaters. The day after this discovery, a system engineer performed a walkdown of other similar systems and found a similar condition on both trains of unit 2 piping penetration area filtration and exhaust system heaters and on one train of fuel handling building post accident filtration system heaters. The power source control relays for these heaters were also reset.</p> <p>The apparent cause of this event was a power disturbance to plant electrical systems. A fault recorder in the plant switchyard registered a disturbance during the passing of a thunderstorm on June 17, 1994. The root cause of the event was the failure of an automatic reset function to operate following the power disturbance. Further evaluation of this event is in progress and recommendations for any necessary changes will be made by August 5, 1994.</p> | | | | | | | | | |

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

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

A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(i) because the plant was operated in a condition prohibited by the Technical Specifications (TS) when three of four trains of control room emergency filtration systems (CREFS) were degraded by the deenergization of their filtration heaters. The TS bases states that "Heaters are provided to ensure that the relative humidity of the air stream entering the adsorbers does not exceed 70 percent".

B. UNIT STATUS AT TIME OF EVENT

At the time of the discovery of this event, both Units 1 and 2 were operating in Mode 1 (power operations) at 100 percent of rated thermal power. There was no inoperable equipment that contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

On June 19, 1994, plant operators were performing shift rounds. Although not a part of the rounds, an operator noticed that a control room emergency filtration system (CREFS) heater reset button was not lit. This led to the discovery that filtration heaters for three of four trains of CREFS were deenergized. The heaters' power source control relays were reset, thereby restoring power to the heaters. The day after this discovery, a system engineer performed a walkdown of other similar systems and found a similar condition on both trains of unit 2 piping penetration area filtration and exhaust system heaters and on one train of fuel handling building post accident filtration system heaters. The relays for these heaters were also reset.

A review of this event determined that, although the HVAC trains involved were in a degraded condition, these trains were not rendered inoperable by the deenergization of their filtration heaters.

D. CAUSE OF EVENT

The apparent cause of this event was a power disturbance to plant electrical systems. A fault recorder in the plant switchyard registered a disturbance during the passing of a thunderstorm on June 17, 1994. The root cause of the event was the failure of an automatic reset function to operate following the power disturbance. The heaters are designed to have control power automatically

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restored after a power interruption. The automatic reset function is accomplished with a seal-in circuit which actuates after a power interruption. When the automatic reset relay deenergizes a contact closes to seal-in and automatically repower when power is restored. A reset in six of the ten heaters with this reset feature did not occur. The relays in the other four HVAC systems either reset or the voltage remained sufficient at those locations such that a reset was not required. The lightning strike caused a momentary power disturbance of approximately 60 to 80 milliseconds at 60% of voltage (as measured in the switchyard), and its impact to the six heater reset relays evidently did not meet the criteria to deenergize the automatic reset feature. However, the power interruption was sufficient to have dropped out the power supply control relays for these heaters. This initiated a "relay drop-out mismatch" between the power supply control relay and the automatic reset relay. Contact with the vendor confirms that the threshold values for deenergizing the heater power supply control relays under "hot coil" conditions is near the time and voltage values of the power interruption experienced. However this differs from vendor catalog specifications and further review is required.

E. ANALYSIS OF EVENT

The purpose of the CREFS heaters is to assure that the relative humidity of air entering the carbon bed is less than 70 percent. This ensures that the carbon bed efficiency assumed for the control room dose analysis is obtained. The heaters were sized to reduce the relative humidity from 100 percent to less than 70 percent. However, during the emergency mode of operation, the filter system recirculates the air from the control room and only about 10 percent of the flow through the filters is outside air. Since 90 percent of the air flowing through the filters is recirculated control room air, which is at a relative humidity of approximately 50 percent, the relative humidity of air passing through the filters would have remained at less than 70 percent, even with the outside air at 100 percent relative humidity. Therefore, operability of the CREFS is not affected by the deenergization of these heaters.

The PPAFES heaters are not required for controlling the relative humidity of the air stream through the adsorbers following a LOCA since no credit is taken for the heaters in the dose analysis. Heaters are provided for defense-in-depth only. Also, the accident analyses do not take credit for the FHB filters, and the other train of FHB post accident filtration was available to provide FHB filtration had it been required to be operable. Furthermore, plant personnel were responsible for prompt action in discovering and correcting the heater control circuit deenergization condition. Finally, no event occurred during the period of time involved which required operation of these HVAC units. Based

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| YEAR | SEQUENTIAL YEAR | REVISION NUMBER |
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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

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 and operation in this condition would not have prevented the affected systems from performing as assumed in the safety analysis.

F. CORRECTIVE ACTIONS

- 1) The heaters were reset, restoring the individual trains to full capability.
- 2) An engineering evaluation of the ventilation system's automatic reset circuitry is being conducted and recommendations for any necessary changes will be made by August 5, 1994. In the interim time period, operator shift rounds have been changed to add verification of heater energization.
- 3) A review of this event for 10 CFR 21 applicability is in progress.

G. ADDITIONAL INFORMATION

- 1) Failed Components:
None
- 2) Previous Similar Events:
None
- 3) Energy Industry Identification System Code:
Control Room Emergency Filtration System -- VI
Piping Penetration Area Filtration and Exhaust System -- VA
Fuel Handling Building Post Accident Filtration System -- VG