U. S. NUCLEAR REGULATORY COMMISSION (NRC)

REGION II

Docket Nos. 50-424 and 50-425 License Nos. NPF-68 and NPF-81

| Report No: | 50-424/98-09, 50-425/98-09 | | |
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| Licensee: | Southern Nuclear Operating Company, Inc. | | |
| Facility: | Vogtle Electric Generating Plant Units 1 and 2 | | |
| Location: | 7821 River Road Waynesboro, GA 30830 | | |
| Dates: | November 15, 1998 through December 26, 1998 | | |
| Inspectors: | J. Zeiler, Senior Resident Inspector M. Widmann, Resident Inspector D. Forbes, Regional Inspector (Sections R1.1 thru R7.1) | | |
| Approved by: | P. Skinner, Chief Reactor Projects Branch 2 Division of Reactor Projects | | |

Enclosure

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EXECUTIVE SUMMARY

Vogtle Electric Generating Plant Units 1 and 2 NRC Inspection Report 50-424/98-09, 50-425/98-09

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a 6-week period of resident inspection. It also includes the results of an announced inspection by a regional radiation protection inspector.

Operations

 The inspectors concluded that the operators' response to the dilution event was prompt and timely. The maintenance activity was well controlled and coordinated. Additionally, the inspectors noted good engineering involvement to investigate and determine the cause of the dilution (Section O1.2).

Maintenance

 The licensee's actions in response to identifying degraded seismic qualifications associated with safety-related circuit breakers was prompt and thorough. Immediate corrective actions were implemented to restore adequate seismic qualification for degraded conditions. The root cause investigation was thorough and planned corrective actions were comprehensive. The licensee had not completed a safety and risk evaluation of circuit breaker seismic qualification. This is identified as Unresolved Item (URI) 50-424, 425/98-09-01: Review of Breaker Seismic Qualification Inadequacies, pending further NRC review (Section M1.2).

Plant Support

- The licensee's water chemistry control program for monitoring primary and secondary water quality had been effectively implemented. However, miscommunications and unfamiliarity with an infrequently performed evolution resulted in a release of sulfates that exceeded chemistry action levels (Section R1.2).
- The licensee's most recent formal Quality Assurance Audits identified items of substance and auditors used checklists to effectively assess the radiation protection program (Section R7.1).
- An emergency preparedr.ess facility activation drill was satisfactorily performed. The drill critique was effective in identifying areas for improvement and these recommendations were being tracked to ensure completion (Section P1.1).

Report Details

Summary of Plant Status

Both Unit 1 and Unit 2 operated at full power throughout the inspection period.

I. Operations

O1 Conduct of Operations

01.1 General Comments (40500) (71707)

The inspectors conducted reviews of ongoing plant operations. In general, the reviews indicated that the conduct of operations was professional and safety-conscious.

O1.2 Unit 2 Dilution Event during Boration

a. Inspection Scope (71707) (62707)

The inspectors reviewed the licensee's actions in response to a dilution event.

b. Observations and Findings

On October 29, an unexpected reactor power increase of approximately 0.14 percent occurred during a manual blended makeup to the Unit 2 volume control tank. Operators responded by inserting control rods and adding approximately 30 gallons of boric acid to mitigate the reactor power increase. After reactor power was stabilized, control rods were withdrawn to the all-rods-out position and normal operations were resumed.

Investigation of the event by licensee engineers determined that the dilution was caused by back leakage through the Chemical Volume and Control System (CVCS) boric acid storage tank to blender check valve. This leakage resulted in the boric acid line upstream of the check valve being diluted with demineralized water. As a result, a dilution occurred when the operator attempted to perform a makeup activity. Maintenance was subsequently performed on the check valve, a satisfactory functional test completed, and the proper concentration of boric acid was reestablished.

c. Conclusions

The inspectors concluded that the operators' response to the dilution event was prompt and timely. The maintenance activity was well controlled and coordinated. Additionally, the inspectors noted good engineering involvement to investigate and determine the cause of the dilution.

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07 Quality Assurance in Operations

07.1 Plant Review Board (PRB) Committee Meetings (40500)

The inspectors attended selected PRB committee meetings during the inspection period. Meetings conducted on November 24 and December 2 involved reviews of routine topics including draft Licensee Event Reports (LERs), plant design change proposals, and plant procedure and Final Safety Analysis Report changes. The inspectors observed that the committee members displayed a good questioning attitude and focused on plant safety.

O8 Miscellaneous Operations Issues

O8.1 (Closed) Violation (VIO) 50-425/98-05-01: Failure to Comply with Technical Specification 3.0.4 - Two Examples (92901)

The inspectors verified the corrective actions described in the licensee's responses dated August 18, 1998, and November 17, 1998, to be reasonable and complete.

O8.2 (Closed) VIO 50-424/98-07-01: Diesel Generator 1A Inoperable Due to Exhaust Piping Blockage (92901)

The licensee's corrective actions to address this issue have been previously documented in NRC Inspection Report 50-424, 425/98-07 and have been verified to be reasonable and complete.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Maintenance Work Order and Surveillance Observations (61726) (62707)

The inspectors observed or reviewed portions of selected maintenance and surveillance activities. The observed maintenance and surveillance activities were completed by personnel knowledgeable of their assigned tasks. Procedures were present at the work location and being followed. Procedures provided sufficient detail and guidance for the intended activities.

M1.2 Inadequate Seismic Qualification for Safety Related Electrical Breakers

(Closed) LER 50-424/98-006-00: Auxiliary Feedwater Train B Breaker Buckets Not Seismically Qualified

(Closed) LER 50-424/98-006-01: Motor Control Center Breaker Buckets Not Seismically Qualified

a. Inspection Scope (40500)(62707)(92903)

The inspectors reviewed the licensee's identification and actions for seismic qualification problems associated with safety-related 480 volt Cutler-Hammer electrical circuit breakers.

b. Observations and Findings

On October 7, 1998, the licensee identified two safety-related 480 volt circuit breakers that did not have the seismic restraining clips installed. These restraining clips, along with two latches, function to prevent the circuit breaker from moving during a seismic event to the extent that could result in the breaker tripping. The seismic clips were reinstalled resolving any immediate seismic qualification concerns.

One of the two circuit breakers identified with unsecured seismic clips was for the Unit 1 Auxiliary Feedwater (AFW) Train B pump miniflow valve. The licensee concluded that AFW Train B had been inoperable for a seismic event since September 1994. The licensee submitted LER 50-424/98-006 to document this condition. During subsequent inspections of all safety-related circuit breakers on both units, the licensee identified additional problems concerning proper seismic configurations of safety-related circuit breakers. In addition to missing seismic clips, the licensee found many seismic clips that had stripped or loose fastners. Circuit breaker latches were also found missing or inadequately secured. By November 24, the licensee's evaluation of these discrepancies identified approximately 103 safety-related components in both units that were impacted to a degree that they may not have been functional during a seismic event. Adequate seismic qualification was restored to these components immediately upon discovery of each discrepancy. On Unit 1, the equipment affected included all three trains of AFW, both trains of the containment spray system and both trains of the high head safety injection system. On Unit 2, the equipment impacted included both trains of the high head safety injection system. The licensee submitted a revision to LER 50-424/98-006 to report these additional conditions.

The inspectors reviewed the results of the licensee's Root Cause and Corrective Action Report, dated December 1, 1998. The licensee determined the causes of the seismic discrepancies were inadequate procedural guidance and lack of awareness of seismic restraint requirements by electrical technicians. The licensee planned to provide additional training and revise applicable maintenance procedures to emphasize the importance of securing latches and seismic clips. The importance of properly securing these restraints was also to be addressed in licensed operator training. Also,

engineering was to provide a list of additional equipment containing seismic clips/restraints which were needed to ensure that the component will function during a seismic event. The inspectors determined that the licensee's corrective actions were adequate to address this issue.

On December 9, 1998, at the licensee's request, an information meeting was held at the NRC Region II office in Atlanta, Georgia to discuss details of the seismic restraint issue. During that meeting, the licensee indicated that they would evaluate the overall risk impact of the systems impacted during a seismic event as it relates to their existing Probabilistic Risk Assessment (PRA) model. At the end of the report period, the licensee had not completed this evaluation. This breaker seismic qualification issue will remain unresolved pending licensee completion of the PRA evaluation and review of the results. This is identified as Unresolved Item (URI) 50-424, 425/98-09-01: Review of Breaker Seismic Qualification Inadeguacies.

c. Conclusions

The licensee's actions in response to identifying degraded seismic qualifications associated with safety-related circuit breakers was prompt and thorough. Immediate corrective actions were implemented to restore adequate seismic qualification for degraded conditions. The root cause investigation was thorough and planned corrective actions were comprehensive. The licensee had not completed a safety and risk evaluation of circuit breaker seismic qualification. This is identified as Unresolved Item (URI) 50-424, 425/98-09-01: Review of Breaker Seismic Qualification Inadequacies, pending further NRC review.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) LER 50-425/98-001-00: Manual Reactor Trip While in Hot Shutdown

The inspectors reviewed this LER and discussed it with licensee personnel. Details pertaining to the event and the licensee's corrective actions were previously discussed in detail in NRC Inspection Report 50-424, 425/98-03. No additional information was identified.

M8.2 (Closed) LER 50-425/98-004-01: Defeat of Turbine Trip Function Leads to Improper Mode Entry

Details of this event were previously reviewed and documented in NRC Inspection Reports 50-424, 425/98-04 and 50-424, 425/98-05. The revised LER corrected a statement regarding the generation of the turbine trip signal and updated the status of corrective actions. The inspectors determined the licensee's corrective actions were adequate.

M8.3 (Closed) LER 50-425/98-005-00: Reactor Trip and Safety Injection Following Condensate Pump Trip

(Closed) LER 50-425/98-005-01: Reactor Trip and Safety Injection Following Condensate Pump Trip

Details of this event were previously reviewed and documented in NRC Inspection Report 50-424, 425/98-05. The revision to the LER extended the due date for one of the corrective actions. The inspectors reviewed the licensee's evaluation of the adequacy of pump motor surge capacitor inspections and testing requirements documented in Request for Engineering Assistance (REA) 98-VAA080. The evaluation recommended several preventive maintenance procedure enhancements to help identify potential surge capacitor degradations during periodic inspections. The inspectors verified that these procedures were revised. The REA also recommended the replacement of surge capacitors with surge arresters to provide greater electrical protection. The inspectors attended a licensee Configuration Control Meeting conducted December 16, 1998. During this meeting management decided to begin implementing the surge arrestor recommendation in the year 2000.

The inspectors also reviewed REA 98-VAA659, dated December 11, 1998. This REA provided the results of the licensee's broadness review for identifying any other critical protective relays in the plant which have the seal-in design feature and have selectable seal-in tap settings. Over 600 relays on both Units 1 and 2 were identified. The licensee planned to check the proper field settings for these relays and to update relay drawings to show the proper relay tap settings.

M8.4 (Closed) LER 50-425/98-007-00: Loss of Feedwater Flow Leads to Reactor Trip

This event was discussed in detail in NRC Inspection Report 50-424, 425/98-07. No additional information was identified.

M8.5 (Closed) LER 50-425/98-008-00: Slave Relay Testing Leads to Trips of Main Feedwater Pumps and Reactor

The results of the licensee's broadness review identified that the turbine protection system could cause an Engineered Safety Features (ESF) actuation if multiple test lamps were depressed simultaneously. The licensee planned to modify the tests circuits associated with the feedwater, as well as turbine protection systems, to prevent similar events. These modifications were scheduled to be completed during the Unit 1 refueling outage in November 2000 and the Unit 2 refueling outage in April 2001. Based on the inspectors review and verification that the licensee's corrective actions identified in the LER were satisfactorily implemented or scheduled, this issue is closed.

III. Engineering

E8 Miscellaneous Engineering Issues (92700) (92903)

E8.1 (Closed) LER 50-424, 425/98-001-02: Concrete Degradation Found In Diesel Generator Exhaust Barriers

LERs 50-424, 425/98-001-00 and 50-424, 425/98-001-01 were previously reviewed and discussed in NRC Inspection Report 50-424, 425/98-06. The licensee issued revision 2 of this LER to document a change in the completion date for pending corrective actions. The inspectors verified all corrective actions were satisfactorily implemented by the new committed date. No additional information was provided by this LER.

IV. Plant Support

R1 Radiological Protection and Chemistry (RP&C) Controls

R1 Radiological Protection and Chemistry Controls

R1.1 Tour of Radiological Controlled Area (RCA)

1. Inspection Scope (84750)

During periodic tours of the RCA, the inspectors observed implementation of selected elements of the licensee's radiation protection program.

<u>Observations and Findings</u>

The inspectors reviewed survey data of radioactive material storage areas. Observations and independent radiation and contamination survey results determined the licensee was effectively controlling and storing, and processing radioactive material and all material observed was appropriately labeled. All areas observed were appropriately posted to specify the radiological conditions.

c. <u>Conclusions</u>

The inspectors determined the licensee was effectively maintaining controls for radioactive material storage and radioactive waste processing.

R1.2 Water Chemistry Controls

a. Inspection Scope (84750)

The inspectors reviewed implementation of selected elements of the licensee's water chemistry control program for monitoring primary and secondary water quality.

b. Observations and Findings

The inspectors reviewed selected analytical results recorded for Units 1 and 2 reactor coolant samples taken between August 16, 1998 and November 16, 1998 and secondary samples taken between August 16, 1998 and November 16, 1998. Those reactor coolant parameters reviewed were maintained well within the relevant TS limits for power operations. Those secondary parameters reviewed were maintained according to station procedures with the exception of one instance.

On October 2, 1998, sulfate levels increased in Unit 2 above normal operating procedural limits. The licensee identified the root cause to be a failure to backwash the "A" condensate filter demineralizer after replacing the filter media; an infrequently performed evolution. Backwashing of the condensate filter demineralizer filter media was necessary to remove an oil coating on the filter media prior to placing the condensate filter demineralizer in service. Direction to backwash the condensate filter demineralizer was included in the Maintenance Work Order (MWO) and discussed at the pre-job briefing required for infrequently performed evolutions. However, due to miscommunications, personnel placing the condensate filter demineralizer in service were not aware of the backwash requirements. Also included in the MWO was direction to contact chemistry personnel prior to placing the condensate filter demineralizer in service to determine if additional backwashes were required. Due to miscommunications, chemistry personnel were not aware that the condensate filter demineralizer was to be placed in service nor were chemistry personnel contacted. Consequently, the oil coating on the condensate filter demineralizer filter media was introduced into the feedwater system which broke down under high temperature releasing sulfates. The condensate filter demineralizer was removed from service and chemistry sampled the feedwater to determine the sulfate concentration. Based on chemistry samples several additional backwashes were required to remove the oil coating before the condensate filter demineralizer was placed back in service.

c. Conclusions

Based on the above reviews, the inspectors concluded that the licensee's water chemistry control program for monitoring primary and secondary water quality had been effectively implemented. However, miscommunications and unfamiliarity with an infrequently performed evolution resulted in a release of sulfates that exceeded chemistry action levels.

R1.3 Transportation of Radioactive Materials

a. Inspection Scope (86750)

The inspectors evaluated the licensee's transportation of radioactive materials programs for implementing the revised transportation regulations for shipment of radioactive materials.

b. Observations and Findings

The inspectors observed a shipment of radioactive material and reviewed applicable procedures and did not identify any deficiencies. The inspectors also reviewed the licensees' records for the six shipments of radioactive material and determined that the shipping papers contained the required information. The inspectors also determined the licensee had maintained records of shipments of licensed material for a period of three years after shipment.

c. Conclusions

Based on the above reviews, the inspectors determined that the licensee had effectively implemented a program for shipping radioactive materials required by regulations.

R2.0 Status of Radiation Protection (RP) and Chemistry Facilities and Equipment

R2.1 Environmental Air Samplers (84750)

To evaluate the licensee's program for maintaining environmental air samplers in an operational condition, the inspectors observed environmental samplers at five air sampling stations and two liquid sampling stations. The inspectors also discussed sampling and counting procedures with laboratory personnel. The inspectors determined that the sampling equipment was calibrated and functional at the time of inspection. The inspectors also verified locations were consistent with their descriptions in the Updated Final Safety Analysis Report and that the samples performed were in accordance with procedures.

R7 Quality Assurance in Radiation Protection and Chemistry

R7.1 Quality Assurance Audits (84750, 86750)

Licensee periodic audits of the RP program were reviewed to determine the adequacy of problem identification and corrective actions. The inspectors reviewed the licensee's most recent audit reports in the areas of chemistry, radwaste, and transportation of radioactive material. Four recommendations included in the audit reports were reviewed by the inspectors. The inspectors determined the licensee had appropriately dispositioned the recommendations based on a review of the corrective actions taken.

P1 Conduct of Emergency Preparedness (EP) Activities

P1.1 EP Facility Activation Drill (82701)

On Decembe: 8, 1998, the licensee conducted an EP facility activation drill. The drill involved activation of the Emergency Operations Facility, Technical Support Center (TSC), and Operations Support Center. The inspector observed the activation, staffing,

and operation of the emergency organization in the TSC. The licensee's performance during the drill was satisfactory and the drill critique was effective in identifying areas for improvement. Recommended corrective actions from the critique were being documented and tracked for closeout.

S1 Conduct of Security and Safeguards Activities

S1.1 Routine Observations of Security and Safeguards Activities (71750)

During the inspectors' periodic tours of the protected area the inspectors assessed security effectiveness. The inspectors observed that the security fence was intact the, isolation zones were being adequately maintained free of objects, and the perimeter and protected area were illuminated. Visitor escorting, and special purpose detectors were used as applicable, prior to personnel or package entry.

V. Management Meetings and Other Areas

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on December 30, 1998. An interim exit meeting was conducted on November 20, 1998. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

- S. Chestnut, Plant Operations Assistant General Manager
- G. Frederick, Manager Operations
- J. Gasser, Nuclear Plant General Manager
- K. Holmes, Manager Maintenance
- P. Rushton, Plant Support Assistant General Manager
- M. Sheibani, Nuclear Safety and Compliance Supervisor
- C. Tippins, Jr., Nuclear Specialist I
- J. Dixon, Health Physics Superintendent
- S. Douglas, Chemistry Superintendent

INSPECTION PROCEDURES USED

- IP 37551: Onsite Engineering
- IP 40500: Effectiveness of Licensee Controls In Identifying, Resolving, and Preventing Problems
- IP 61726: Surveillance Observation
- IP 62707: Maintenance Observation
- IP 71707: Plant Operations
- IP 71750: Plant Support
- IP 82701: Operational Status of the Emergency Preparedness Program

- IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring
- IP 86750: Solid Radioactive Waste Management and Transportation of Radioactive Materials
- IP 92700: Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities
- IP 92901: Followup Operations
- IP 92902: Followup Maintenance/Surveillance
- IP 92903: Followup Engineering
- IP 92904: Followup Plant Support

ITEMS OPENED AND CLOSED

Opened

| 50-424, 425/98-09-01 | URI | Complete Review of Breaker Seismic Qualification Inadequacies (Section M1.2) |
|----------------------|-----|---|
| Closed | | |
| 50-425/98-05-01 | VIO | Failure to Comply with Technical Specification 3.0.4 - Two Examples (Section O8.1) |
| 50-424/98-07-01 | VIO | Diesel Generator 1A Inoperable Due to Exhaust Piping Blockage (Section O8.2) |
| 50-424/98-006-00 | LER | Auxiliary Feedwater Train B Breaker Buckets not Seismically Qualified (Section M1.2) |
| 50-424/98-006-01 | LER | Motor Control Center Breaker Buckets not Seismically Qualified (Section M1.2) |
| 50-425/98-001-00 | LER | Manual Reactor Trip While in Hot Shutdown (Section M8.1 |
| 50-425/98-004-01 | LER | Defeat of Turbine Trip Function Leads to Improper Mode Entry (Section M8.2) |
| 50-425/98-005-00 | LER | Reactor Trip and Safety Injection Following Condensate Pump Trip (Section M8.3) |
| 50-425/98-005-01 | LER | Reactor Trip and Safety Injection Following Condensate Pump Trip (Section M8.3) |
| 50-425/98-007-00 | LER | Loss of Feedwater Flow Leads to Reactor Trip (Section M8.4) |

50-425/98-008-00

LER Slave Relay Testing Leads to Trips of Main Feedwater Pumps and Reactor (Section M8.5)

50-424, 425/98-001-02

LER Concrete Degradation Found In Diesel Generator Exhaust Barriers (Section E8.1)