



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W., SUITE 2900
 ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-424/95-18 and 50-425/95-18

Licensee: Georgia Power Company
 P. O. Box 1295
 Birmingham, AL 35201

Docket Nos.: 50-424 and 50-425

License Nos.: NPF-68 and NPF-81

Facility Name: Vogtle 1 and 2

Inspection Conducted: July 16, 1995 through August 19, 1995

Inspector: *[Signature]* 9.11.95
 for B. R. Bonser, Senior Resident Inspector Date Signed

[Signature] 9.11.95
 for P. C. Hopkins, Resident Inspector Date Signed

[Signature] 9.11.95
 for M. T. Widmann, Resident Inspector Date Signed

Approved by: *[Signature]* 9/12/95
 for P. Skinner, Chief Date Signed
 Reactor Projects Section 3B
 Division of Reactor Projects

SUMMARY

Scope: This routine, inspection entailed inspection in the following areas: plant operations, surveillance, maintenance, plant support, onsite engineering, evaluation of licensee self-assessment capability, and follow-up. Backshift inspections were performed July 17-18, 20, 23-24 and 28, 1995.

Results: One violation and two non-cited violations were identified.

Operations:

- A violation was identified regarding the performance of diesel generator moisture checks. An operator was observed

performing the diesel generator 2A moisture checks alone contrary to the plant procedure that requires two operators perform the check (paragraph 1.e).

- The first non-cited violation concerned an inadvertent entry into Technical Specification 3.0.3, Limiting Conditions For Operation and Surveillance Requirements, due to the placement of the Unit 1 containment radiation monitors in the blocked position for three and one half hours. The entry in technical specification 3.0.3 was attributed to personnel error on behalf of the Unit Shift Supervisor (paragraph 1.f).
- A weakness was identified during the inspection period in the performance of operations control room conduct, communications, and formality. During the inspection period the inspectors observed several examples of inappropriate conduct, weak communications, and a lack of formality during routine control room activities (paragraph 1.g).

Maintenance:

- The second non-cited violation concerned the discovery of a 2" X 10" X 36" fire retardant board inside the diesel generator 2A engine control panel relay cabinet. The board was placed in the relay cabinet during modification work on the diesel generator voltage regulator in the previous refueling outage (paragraph 4.b).

Plant Support:

- A weakness was identified in the graded emergency preparedness exercise on July 19. The quantification of radioactive effluent release information was delayed on the notification messages sent to off site authorities due to a lack of an established methodology to perform dose assessment for unmonitored releases (paragraph 6.b).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Beasley, General Manager Nuclear Plant
- S. Bradley, Reactor Engineering Supervisor
- *W. Burmeister, Manager Engineering Support
- *C. Christiansen, SAER Supervisor
- C. Coursey, Maintenance Superintendent
- R. Dorman, Manager Training and Emergency Preparedness
- *S. Driver, Plant Training Supervisor
- *J. Gasser, Manager Operations
- *P. Green, Senior Engineer ISEG
- *M. Griffis, Manager Plant Modifications
- T. Hargis, Maintenance Superintendent
- M. Hobbs, I&C Superintendent
- *K. Holmes, Manager Maintenance
- D. Huyck, Manager Nuclear Security
- *W. Kitchens, Assistant General Manager Plant Support
- I. Kochery, Health Physics Superintendent
- *R. LeGrand, Manager Health Physics and Chemistry
- G. McCarley, ISEG Supervisor
- T. Parton, Health Physics Superintendent
- *P. Rushton, Unit Superintendent Operations
- *M. Sheibani, Nuclear Safety and Compliance Supervisor
- C. Stinespring, Manager Plant Administration
- *J. Swartzwelder, Manager Outage and Planning
- *C. Tippins, Nuclear Specialist, NSAC
- *R. Waters, Material Supervisor, Plant Administration

Other licensee employees contacted included technicians, supervisors, engineers, operators, maintenance personnel, quality control inspectors, and office personnel.

Oglethorpe Power Company Representative

- T. Mazingo, Site Representative

NRC Inspectors

- M. Ernstes, Reactor Engineer, Region II
- B. Bonser, Senior Resident Inspector, Outgoing
- *C. Ogle, Senior Resident Inspector, Incoming
- P. Hopkins, Resident Inspector
- *M. Widmann, Resident Inspector

*Attended Exit Interview

An alphabetical list of abbreviations and acronyms is located in the last paragraph of the inspection report.

2. Plant Operations (71707) (93702)

a. General

The inspection staff reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements, TS, and administrative controls. Control logs, shift supervisors' logs, shift relief records, LCO status logs, night orders, standing orders, and clearance logs were routinely reviewed. Discussions were conducted with plant operations, maintenance, chemistry, health physics, engineering support and technical support personnel. Daily plant status meetings were routinely attended.

Activities within the control room were monitored during shifts and shift changes. Actions observed were conducted as required by the licensee's procedures. The complement of licensed personnel on each shift met or exceeded the minimum required by TS. Direct observations were conducted of control room panels, instrumentation and recorder traces important to safety. Operating parameters were verified to be within TS limits.

Plant tours were taken during the reporting period on a routine basis. They included, but were not limited to the auxiliary building, control building, electrical equipment rooms, cable spreading rooms, NSCW towers, DG buildings, AFW buildings, MSIV rooms, turbine building and the low voltage switchyard. Housekeeping and equipment status were observed during plant tours.

b. Unit 1 Summary

The unit operated at 100% power until July 23, when an automatic reactor trip occurred due to a lightning strike. The strike caused a loss of power to the rod control system causing all 53 control rods to drop in the core. All safety systems responded as designed and the unit was safely stabilized in Mode 3, Hot Standby, after the trip. On July 26, the unit entered Mode 2 and the reactor was taken critical. The unit reached 100% power on July 28, and remained at full power throughout the rest of the inspection period.

c. Unit 2 Summary

The unit operated at 100% power until July 23, when an automatic reactor trip occurred due to a lightning strike. The strike caused a loss of power to the rod control system causing 21 of 53 control rods to drop in the core. All safety systems responded as designed and the unit was safely stabilized in Mode 3, Hot Standby, after the trip. On July 24 and 25, the unit entered Mode 2 and Mode 1, respectively. The unit reached 100% power on

July 27, and remained at full power throughout the rest of the inspection period.

d. Dual Unit Reactor Trip

On July 23, both units tripped automatically from full power as a result of a lightning strike to the plant power block (i.e., containment and north MSIV room). As a result of the lightning strike, the rod control system power cabinets +24 VDC power supplies sensed an over-voltage condition. The rod control power supply cabinets' protection circuits actuated, shunting their output voltage to zero. The momentary loss of power caused the stationary gripper coils to de-energize allowing the control rods to fall into the reactor cores. This resulted in a rapid decrease in reactor power, and a subsequent sharp decrease in pressure and temperature. The low pressurizer pressure automatic reactor trip set point was reached and generated the reactor trip signal. All safety systems functioned as designed.

The rod control system uses five power cabinets to control all rod motion. Each of the power cabinets has a primary and a backup +24 VDC power supply. The rod control power cabinets' power supplies are designed with over-voltage and over-current protection circuitry. If a simultaneous loss of primary and backup power occurs, as it did when the lightning strike caused an over-voltage condition, it results in loss of control circuitry output signal to the stationary gripper coils allowing the control rods to fall into the core. Unit 1 received a momentary loss of power to two rod control power supply cabinets that allowed 21 control rods to drop into the core. Unit 2 received a total loss of power to the five rod control system power supply cabinets and dropped all 53 rods into the core.

A similar lightning strike event occurred on Unit 1 on July 31, 1988. All rods dropped into the core on a loss of power to the rod control gripper coils. From that event the licensee recommended and implemented corrective actions including the installation of surge suppressors in the AC power source system. As a result of the dual unit trip on July 23, 1995, the licensee formed a critique team to investigate the cause and recommend further corrective actions from the reactor trip event. The current critique team has not identified the mechanism by which the control rods were allowed to fall into the core prior to the reactor trip breakers opening. The lightning protection system was designed to withstand a 25.3 KA strike. The July 23 lightning strike was recorded at approximately 68 KA.

The licensee tested the rod control system operation satisfactorily prior to restarting both units. Each individual power supply was tested for load carrying capability. No problems were identified during testing. No other systems were damaged as a result of the lightning strike.

Although the lightning strike should not have affected the rod control system, the plant responded as designed to the over-voltage condition. The transient did not result in a condition outside the design basis of the plant. The inspector concluded that the licensee effectively analyzed the event and recommended appropriate engineering reviews to determine if an inadequate design exists for the plant ground mat or if there are completed loop circuits within the ground system. The critique team's investigation was hindered immediately following the event due to one of the Unit 1 motor generator sets being shut off and restarted. The MG sets provide power to the inputs of the primary power supplies. Shutting the MG sets off, then restarting, reset any actuated over-voltage protection on the five primary power supplies making it impossible to determine if the over-voltage circuitry had actuated. Two of the five backup power supplies on Unit 1 were found to have their output voltage shunted, indicating that their over-voltage circuitry had actuated. The inspector did not identify any concerns during this review.

e. Emergency Diesel Generator 2A Moisture Checks

On August 3, the inspector identified, during operation's preparations for the DG 2A surveillance test, that one operator inadequately performed required cylinder moisture checks. Procedure 13145, Diesel Generators, provides instructions on how to perform cylinder moisture checks and states that two operators are required to perform the moisture check prior to commencement of DG surveillance tests.

A visual moisture check is required to be performed by operators to verify that water has not accumulated in the cylinder head since the last surveillance test. During performance of procedure 13145, one operator was required to bar (roll) the engine and another operator was required to observe the individual cylinder exhaust petcocks for evidence of moisture. Accumulated water or water droplets identified being exhausted from the cylinder petcocks indicate potential head cracking problems. Previous head cracking problems have been identified and are currently being investigated by the licensee and followed by the NRC (see IFI 50-424/94-30-01, Identification of Cause for 1A DG Head Leaks).

During the observations of August 3, the inspector concluded that one operator was unable to adequately perform the moisture check and bar the engine simultaneously. No moisture was identified during the barring of the 2A DG, but considering the DG safety function and the previously identified cracked head problems, the operator did not meet the requirements of procedure 13145 by performing the moisture check alone. The inspector also identified that the licensee had previously revised the DG procedure to specifically address potential moisture problems and ensure adequate moisture checks by requiring two operators to perform the checks. The failure to perform the DG procedure as

intended is identified as VIO 50-425/95-18-01, Failure to Follow Procedure During Diesel Generator 2A Moisture Checks.

f. Automatic Containment Ventilation Actuation Function Inactivated

On July 24, shortly after the reactor trip, the Unit 1 USS authorized containment radiation monitors 1RE-002, 1RE-003, 1RE-2565, to be blocked for approximately three and half hours during maintenance on intermediate range neutron detector NI-36. Blocking the three radiation monitors represented a TS 3.0.3 entry, Limiting Conditions For Operation and Surveillance Requirements, and a condition that could have prevented fulfillment of a safety function needed to control the release of radioactive material.

To prevent inadvertent actuation of the containment ventilation system during maintenance activities on NI-36, the Unit 1 USS authorized entry into TS 3.3.2, Engineered Safety Features Actuation System. However, the USS inadvertently misread the action statement as it applied to the radiation monitors. TS 3.3.2, action 18, allowed continued unit operation with one radiation monitor operable provided the containment purge supply and exhaust dampers were closed within 24 hours. The USS met the requirement to close the supply and exhaust valves, but failed to recognize that the TS did not allow the three radiation monitors to be blocked simultaneously in any mode other than Mode 6. That misunderstanding put the unit in a condition prohibited by TSs; an automatic entry into TS 3.0.3, action statement A. The action statement required initiation of actions to place the unit in at least hot standby within one hour, and to be in Mode 3 within the following six hours. On July 24, the unit was already in hot standby, at zero percent power, due to the reactor trip on July 23. On July 25, during discussions between another USS and the maintenance personnel who wanted to continue with the previous day's activities, the USS discovered that the radiation monitors were previously placed in the blocked position. A DC was immediately initiated and the NRC was notified. The licensee determined that the cause of the event was a cognitive personnel error on the part of the USS and SS.

Based on this review, the inspector concluded this event had minor safety significance. A direct vent path from inside to outside containment was not established, and no event occurred that would have required an automatic CVI actuation to prevent release of radioactive materials. The radiation monitors were operable the entire time they were in block, but had their automatic function to initiate a CVI blocked. The inadvertent entry into TS 3.0.3 is identified as NCV 50-424/95-18-02, Blocked Unit 1 Containment Ventilation Isolation Signal. This licensee-identified and corrected violation is being treated as a non-cited violation, consistent with section VII of the NRC Enforcement Policy. This event is also documented in LER 50-424/95-003.

g. Conduct of Operations, Communications and Control Room Formality

During the inspection period the inspectors observed several examples of inappropriate conduct of operators, weak communications, and a lack of formality during performance of routine control room activities.

During surveillance testing on DG 2B, a control room operator was observed to have taken the DG fuel oil transfer pump handswitch from AUTO to MANUAL, and back to AUTO, to communicate to the DG PEO to pick up his headset. The PEO received a local diesel annunciator panel alarm as a signal to pickup the headset. The USS and SS were in the control room at the time of the testing. The SS stated that this was a common practice. An operator was observed improperly resting against MCR equipment. Poor communications were observed during performance of security DG testing. The field operator did not communicate to the MCR, prior to commencement of testing activities, that an alarm would annunciate in the MCR when a breaker was opened. As a result, unexpected alarms were received in the MCR due to the poor coordination between the field operator and control room personnel. PEOs and ROs were routinely observed not adhering to requirements for access to the "at the controls area." Operators observed did not request permission for access and did not have duty related business in that area. Administrative procedure 00301-C, Main Control Room Access and Personnel Conduct, states that personnel coming into the "at the controls" area stay behind the RO's desk and away from the red carpet area adjacent to the MCB. The observation was made that during modification work to the MCB clear plastic was placed over the letdown and seal leakoff system handswitches on the MCB while at full power operations. The plastic could have hindered the RO's ability to respond to event or monitor system status.

Based on the examples observed the inspectors concluded that a weakness has been identified in control room conduct of operations, communications, and formality.

One violation and one non-cited violation were identified.

3. Surveillance Observation (61726)

Surveillance tests were reviewed by the inspectors to verify procedural and performance adequacy. The completed tests were examined for necessary test prerequisites, instructions, acceptance criteria, technical content, data collection, independent verification where required, handling of deficiencies, and review of completed work. The tests witnessed, in whole or in part, were inspected to determine that approved procedures were available, equipment was calibrated, prerequisites were met, tests were conducted according to procedure, test results were acceptable, and system restoration was completed.

The inspectors witnessed or reviewed the following surveillance activities:

<u>SURVEILLANCE NO.</u>	<u>TITLE</u>
14286-1	Turbine Trip Device Operability Test
14400-1	Control Room Emergency Filtration Actuation Logic Test
14421-1	SSPS and Reactor Trip Breaker Train B
14510-1,2	Control Room Emergency Filtration System Operability Test
14644-1	SSPS Slave Relay K643 Train A Containment Spray Test
14804-1	Safety Injection Pump A IST
14806-2	Containment Spray Pump Inservice and Response Time Test
14807-1	MDAFW Pump and Check Valve IST

The inspectors did not identify any problems or concerns during the observation of these surveillance activities.

No violations or deviations were identified.

4. Maintenance Observation (62703)

a. General

Maintenance activities were observed or reviewed during the reporting period to verify that work was conducted in accordance with approved procedures, TSs, and applicable industry codes and standards. Activities, procedures, and work orders were examined to verify proper authorization to begin work, fire hazard provisions, cleanliness, and exposure controls, proper return of equipment to service, and adherence to LCOs were met.

The inspectors witnessed or reviewed the following maintenance activities:

<u>MWO NOS.</u>	<u>WORK DESCRIPTION</u>
19502245	Troubleshoot/Rework 1FV-0520 SG Loop 2 Feedwater Regulating Valve
19502276	MDAFW Train A; Drain and Flush Outboard Bearing

19502428	Inspection of Air Start Pressure Gauges for Moisture on 1A/B DG
29501960	Power Driven Potentiometer Replacement on Diesel Generator 2A
29502006	ARV-3010 Troubleshoot; Hydraulic Reservoir Leak
29502167	Inspection of Air Start Pressure Gauges for Moisture on 2A/B DG

The inspectors did not identify any problems or concerns during the observation of these maintenance activities.

b. Board Inside DG Engine Control Panel Relay Cabinet

On August 3, while observing maintenance in the DG control cabinets, the inspector identified a 2" X 10" X 36" fire retardant board laying across the floor opening inside the DG 2A engine control panel relay cabinet. Procedure 00254-C, Plant Housekeeping/Material Condition Program, provides instructions for Zone IV cleanliness, and requires inspections to be conducted and documented prior to closing systems to verify the systems meet cleanliness acceptance criteria. The procedure guidance established for Zone IV requires, during and after work activities, that areas and plant equipment be left cleaner than they are found.

During Unit 2 refueling outage modification work to the DG 2A voltage regulator, personnel installed the board inside the cabinet to stand on. At the conclusion of their work the board was inadvertently left inside the cabinet and the door closed. Maintenance/modification paperwork was signed off documenting that Zone IV housekeeping cleanliness standards were maintained. The board was left in the DG relay cabinet since the commencement of Unit 2 startup from refueling outage 2R4 on March 30, 1995.

Based on a licensee's engineering analysis, the inspector concluded that the fire retardant board left inside the DG relay cabinet was of minor safety significance. During a seismic event the board would not have caused relay equipment to become inoperable or damage cabling connecting instruments inside the cabinet. The failure to remove the board from within the cabinet did not meet the requirements of housekeeping Zone IV cleanliness procedure 00254-C and is identified as NCV 50-425/95-18-03, Failure to Control Materials In Diesel Generator 2A Engine Control Panel. This failure constitutes a violation of minor significance and is being treated as a non-cited violation, consistent with section IV of the NRC Enforcement Policy.

One non-cited violation was identified.

5. Onsite Engineering (37551)

During the inspection period, the inspectors assessed the effectiveness of onsite engineering processes by reviewing engineering evaluations, root cause determinations, modifications, and engineering testing. The inspectors also reviewed DCs to determine whether the licensee was appropriately documenting problems and implementing corrective actions.

No violations or deviations were identified.

6. Plant Support (71750) (81700)

a. General

Plant support activities were observed and reviewed to ensure that licensee programs were implemented in conformance with facility policies and procedures and in compliance with regulatory requirements. Activities reviewed included radiological controls, physical security, and fire protection.

The inspectors did not identify any problems or concerns during the observation of these activities.

b. Observation and Evaluation of Annual Emergency Preparedness Exercise

On July 19, the inspectors observed and evaluated the 1995 annual emergency exercise. Portions of the exercise were evaluated from the simulator, TSC, OSC, and EOF. The exercise evaluation included: an assessment of the onsite emergency organization, staffing, and conduct of operations in the emergency facilities; observation of the licensee's accident assessment and emergency classification system; evaluation of communications between the licensee's emergency response facilities and between the licensee's emergency organization and off site authorities; adequacy of the emergency facilities and equipment; and verification that recommendations for protective actions during the exercise were developed and in place.

Overall the inspectors concluded that the licensee met the objectives of the exercise and demonstrated they could effectively respond to an emergency. The licensee's emergency organization responded to and classified the simulated event appropriately. The emergency facilities were activated promptly and communications both within the licensee organization and with off site authorities were effective. Onsite notifications and assembly and accountability were adequate. The licensee also conducted a post-exercise critique that determined areas for improvement and corrective action.

One weakness identified was a delay in the quantification of radioactive effluent release information on the notification

messages sent to off site authorities. The exercise scenario contained an unmonitored release from a faulted SG. The first exercise notification message to contain detailed release information was the third message issued about one and a half hours after the emergency was declared. The cause of the delay was the lack of an established methodology to perform dose assessment for an unmonitored release.

c. Review of Security Response Activities to Internal Threat

The inspector reviewed the licensee's security plan response actions in the event of an internal threat. The inspector discussed, with the licensee's Security Manager, the security force's immediate actions and any onsite compensatory measures necessary upon confirmation that an internal threat has been identified.

Based on this review, the inspector was satisfied that the licensee's security plan would adequately address the possibility of an internal threat.

d. Fire Protection/Prevention Program

The inspector observed a graded fire drill on July 31. The fire brigade posted 5 fully dressed members. Extra personnel were available to assist brigade members in dressing and equipment selection. The fire brigade team briefing and locating of the simulated fire was accomplished promptly.

The inspector also reviewed fire protection equipment storage and dress out area condition, fire protection procedures used during the drill, and training for fire brigade members. The inspector identified no concerns.

No violations or deviations were identified.

7. Follow-up (92701)

The following items were reviewed using licensee reports, inspections, record reviews, and discussions with licensee personnel, as appropriate:

(Closed) LER 50-424/95-003, Automatic Containment Ventilation Isolation Actuation Function Inactivated

This item identified that containment radiation monitors RE-002, RE-003, RE-2565, were blocked for approximately three and half hours during performance of maintenance work on intermediate range neutron detector NI-36. The licensee's corrective actions included counseling the USS and SS involved in the event and the importance of attention to detail.

This issue was reviewed in paragraph 1.f of this report. The inspector concluded based on the licensee's corrective actions that the issue is satisfactorily addressed. LER 50-424/95-003 is closed.

(Closed) VIO 50-424, 425/93-18-01, Failure to Notify the Commission of the Change in Medical Status of an Operator.

This violation was for the failure of the licensee to notify the NRC of the determination by the licensee's physician of a "no solo" condition. The inspector verified that the licensee completed their corrective actions satisfactorily. Any Physical Limitation Evaluation (PLE) is now forwarded to licensing for determining if Commission notification is warranted. Site and corporate procedures were verified to be revised to preclude recurrence. Based on this review, VIO 50-424,425/93-18-01 is closed.

No violations or deviations were identified.

8. Exit Meeting

The inspection scope and findings were summarized on August 21 with those persons indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during the inspection.

<u>Item No.</u>	<u>Status</u>	<u>Description and Reference</u>
VIO 50-425/ 95-18-01	Open	Failure to Follow Procedure During Diesel Generator 2A Moisture Checks (paragraph 1.e).
NCV 50-424/ 95-18-02	Closed	Blocked Unit 1 Containment Ventilation Isolation Signal (paragraph 1.f).
NCV 50-425/ 95-18-03	Closed	Failure to Control Materials In Diesel Generator 2A Engine Control Panel (paragraph 4.b).
LER 50-424/ 95-003	Closed	Automatic Containment Ventilation Isolation Actuation Function Inactivated (paragraph 8).
VIO 50-424,425/ 93-18-01	Closed	Failure to Notify the Commission of the Change in Medical Status of an Operator (paragraph 8).

9. Abbreviations

AC	- Alternating Current
AFW	- Auxiliary Feedwater System
ARV	- Atmospheric Relief Valve
CVI	- Containment Ventilation Isolation
DC	- Deficiency Card
DG	- Diesel Generator
EOF	- Emergency Operating Facility
FR	- Federal Register
I&C	- Instrumentation and Controls
IFI	- Inspector Followup Item
ISEG	- Independent Safety Engineering Group
IST	- Inservice Test
KA	- Kiloamps
LCO	- Limiting Condition for Operation
LER	- Licensee Event Report
MCB	- Main Control Board
MDAFW	- Motor Driven Auxiliary Feedwater
MG	- Motor Generator
MSIV	- Main Steam Isolation Valve
MWO	- Maintenance Work Order
NCV	- Non-Cited Violation
NI	- Nuclear Instrumentation
NPF	- Nuclear Power Facility
NRC	- Nuclear Regulatory Commission
NSAC	- Nuclear Safety and Compliance
NSCW	- Nuclear Service Cooling Water System
OSC	- Operations Support Center
PEO	- Plant Equipment Operator
RE	- Radioactive Effluent
RO	- Reactor Operator
SAER	- Safety Audit And Engineering Review
SG	- Steam Generator
SSPS	- Solid State Protection System
SS	- Shift Superintendent
TS	- Technical Specifications
TSC	- Technical Support Center
USS	- Unit Shift Supervisor
VDC	- Volts Direct Current
VIO	- Violation
2R4	- Unit 2 Fourth Refueling Outage