



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

Report Nos.: 50-424/94-09 and 50-425/94-09

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: March 20, 1994 - April 23, 1994

Inspector:	<u>Debrah A. G.</u>	<u>5.17.94</u>
	oo B. R. Bonser, Senior Resident Inspector	Date Signed
	<u>Debrah A. G.</u>	<u>5.17.94</u>
	for R. D. Starkey, Resident Inspector	Date Signed
	<u>Debrah A. G.</u>	<u>5.17.94</u>
	for P. A. Balmain, Resident Inspector	Date Signed
	<u>Debrah A. G.</u>	<u>5.17.94</u>
	D. A. Seymour, Project Inspector	Date Signed

Approved by:	<u>Lucie Skinner</u>	<u>5/17/94</u>
	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, and follow-up of open items.

Results: One unresolved item was identified.

The unresolved item involved the falsification of a battery maintenance datasheet. Additional NRC review is pending prior to resolution of this issue (paragraph 4c).

The inspectors observed the licensee's control room enhancements and control room chart recorder replacements and noted these as improvements in main control room facilities (paragraph 2f).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- J. Beasley, General Manager Nuclear Plant
- S. Bradley, Reactor Engineering Supervisor
- *W. Burmeister, Manager Engineering Support
- S. Chesnut, Manager Engineering Technical Support
- *C. Christiansen, SAER Supervisor
- C. Coursey, Maintenance Superintendent
- R. Dorman, Manager Training and Emergency Preparedness
- G. Frederick, Manager Maintenance
- *W. Gabbard, Nuclear Specialist, Technical Support
- M. Griffis, Manager Plant Modifications
- M. Hobbs, I&C Superintendent
- *K. Holmes, Manager Operations
- *G. Hooper, Engineering Supervisor, Technical Support
- *D. Huyck, Nuclear Security Manager
- *W. Kitchens, Assistant General Manager Plant Support
- R. LeGrand, Manager Health Physics and Chemistry
- *G. McCarley, ISEG Supervisor
- R. Moye, Plant Engineering Supervisor
- M. Sheibani, Nuclear Safety and Compliance Supervisor
- C. Stinespring, Manager Administration
- *J. Swartzwelder, Manager Outage and Planning
- C. Tynan, Nuclear Procedures Supervisor
- J. Williams, Supervisor Work Planning and Controls

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

Oglethorpe Power Company Representative

*T. Mozingo

NRC Resident Inspectors

- B. Bonser
- D. Starkey
- *P. Balmain

*Attended Exit Interview

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

2. Plant Operations (71707)

a. General

The inspection staff reviewed plant operations throughout the reporting period to verify conformance with regulatory requirements, Technical Specifications, 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. The inspectors also reviewed DCs to determine whether the licensee was appropriately documenting problems and implementing corrective actions.

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

During plant tours, housekeeping, security, equipment status and radiation control practices were observed. The inspector identified housekeeping discrepancies at the hydrogen storage area and the Unit 1 and 2 Condenser Air Ejector Radiation Monitor skids. The inspector identified an unsecured gas cylinder and an improperly grounded hydrogen tube trailer in the hydrogen storage area and miscellaneous debris in the radiation monitor skids. The inspector informed control room and Chemistry personnel and these discrepancies were corrected.

b. Unit 1 Summary

The unit operated at 100% power throughout the inspection period.

c. Unit 2 Summary

The unit began the period at 100% power. Power was decreased to 95% on March 29, to perform maintenance on low pressure feedwater heater instrumentation. On March 31, power was returned to 100%. On April 5, power was again decreased to 95% for further feedwater heater instrumentation work, and 100% power was resumed on

April 6. On April 14, power was reduced to 90% to allow repairs to a packing leak on the manual bypass valve around the 2A HDP drain tank normal level control valve. Following completion of the valve repair, the unit was returned to 100% power where it remained through the remainder of the reporting period.

d. Review of Overtime Administration

During this inspection period the inspector reviewed the licensee's administration of overtime in the areas of operations, maintenance, health physics, radiological waste, and chemistry. This review encompassed the last two refueling outages, 1R4 and 2R3, which occurred in the spring and fall of 1993 respectively. The inspector used the guidance provided in T.S. 6.2.2.e. Plant Staff, and Procedure 00005-C, Overtime Authorization, in conducting this review. The inspector noted that maintenance worked the greatest amount of OT during each of the last two outages, followed by operations, health physics, radiological waste, and chemistry. Also noted was that each group worked a higher weekly average of OT during refueling outage 2R3 than during the refueling outage 1R4. Examples of this are: maintenance worked approximately 6026 hrs/week during 1R4 versus 7144 hrs/week during 2R3, and operations worked approximately 1143 hrs/week during 1R4 versus 1475 hrs/week during 2R3.

The inspector reviewed the process by which OT in excess of TS guidelines was approved and reviewed, and the documentation of that approval and review. The inspector concluded that, although there was a large amount of OT worked during the last two refueling outages, the licensee appropriately approved, reviewed, and controlled OT according to TS and procedural guidance. The inspector did not identify any concerns with regard to the licensee's administration of overtime.

e. Operation with Failed Fuel

During this inspection period, the inspector reviewed the licensee's analysis of reactor coolant chemistry data for the current fuel cycles for both units. The results of the analysis concluded that each unit is operating with one failed fuel rod.

The first indication of leaking fuel for Unit 1 occurred on November 27, 1993, when elevated Xe-133 concentrations were detected in RCS samples. Following a unit shutdown on February 2, elevated Xe-133 and iodine spiking confirmed that fuel was leaking. The licensee concluded that one fuel rod was leaking and that the failure was a tight defect. A tight defect is a small crack or pin hole through the fuel cladding of the fuel rod that releases fission products after relatively large power changes, due to the increase of internal fuel rod gas pressure. The licensee estimated that the failed rod is located in a second or third burned assembly. There are a total of 109 second and third

burned assemblies in the Unit 1 core. During the next Unit 1 refueling outage, 16 of these assemblies are planned to be reloaded. The licensee is evaluating fuel sipping and core reload redesign to ensure that the leaking fuel assembly is not reloaded.

Reactor coolant chemistry data for Unit 2 indicated that a fuel leak began on November 19. The data indicated that the leaking rod has a tight defect and that the rod is located in a second or third burned assembly. None of these assemblies are planned to be reloaded during the next Unit 2 refueling outage.

The licensee developed a standing order to provide guidance for Unit 1 and 2 operation with fuel defects. The inspector reviewed the standing order and observed that the rate of reactor power increases are restricted above 20% power to minimize the potential for increasing the existing failures. The standing order also provides instructions for obtaining additional RCS samples following power reductions.

The inspector did not identify any concerns during this review of the licensee's actions in response to recent fuel failures.

f. Control Room Enhancements

During this inspection period, the licensee began efforts to enhance the main control room by replacing desktops, carpeting, and furniture. The licensee also began replacement of approximately 16 chart recorders per unit. Historically, the chart recorders in the control room required significant licensee efforts to maintain operability. The new chart recorders are expected to require less maintenance to keep operable. By the end of the inspection period this effort was largely completed.

The inspector noted that the enhancements improved the SRO and RO workstations and improved the reliability and level of information available from control room chart recorders.

No violations or deviations were identified.

3. Surveillance Observation (61726)

Surveillance tests were reviewed by the inspectors to verify procedural and performance adequacy. The completed tests reviewed were examined for necessary test prerequisites, instructions, acceptance criteria, technical content, data collection, independent verification where required, handling of deficiencies noted, 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 systems restoration was completed.

<u>SURVEILLANCE NO.</u>	<u>TITLE</u>
28820-1	Battery Charger Load Test IADClA
14701-1	Reactor Trip Breakers UV and Shunt Trip Test.
24665-1	Condenser Air Ejector Radiogas Flow 1F12839 ACOT and Channel Calibration
14545-1	Motor Driven Auxiliary FeedWater Pump Monthly Operability Test - A Train
14410-2	Control Rod Operability Test
13502-2	Control Rod Drive and Position Indication System

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 and/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, provisions for fire, cleanliness, and exposure control, proper return of equipment to service, and that limiting conditions for operation were met.

The inspectors witnessed or reviewed the following maintenance activities:

<u>MWO NOS.</u>	<u>WORK DESCRIPTION</u>
19401681	Troubleshoot 1BA03 Bus Negative Phase Sequence Relay
29303696	Apparent Ground on 125 VDC Bus 2BD1
29400910	Replace 4-way valve on Loop 1 MFIV - 2HV 5227

29400607	Feedwater Heater Instrumentation Verification - 1C Heater
29401043	Suspect Air Inleakage into 2A ESF Chiller

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

b. Review of MFIV Four Way Hydraulic Valve Failures

On October 29, 1992, Anchor/Darling Valve Company notified GPC of a potential defect (Part 21) in the hydraulic four-way valves supplied with Vogtle MFIVs. That Part 21 notification was reviewed by the inspectors and documented in NRC IR 50-424, 425/93-02. Since the inspector's initial review, there have been two failures of MFIV four-way valves at Vogtle. In both cases, the failed valve was replaced with the unit on-line and the MFIV fully open. Because of these two failures, the inspectors have reviewed the current status of MFIV four-way valves. Each MFIV has redundant hydraulic closure trains with two four-way valves in each closure train, and either train is capable of closing the MFIV.

The first inservice four-way valve failure occurred on December 2, 1993 on Unit 2 MFIV 2HV-5227. One of the four four-way valves was leaking and had shifted position, allowing the contents of the hydraulic accumulator to dump to the hydraulic fluid reservoir. The failed valve had a serial number of 1600. Although the Part 21 applicability was limited to four-way valves with pre-1600 serial numbers, this failure appeared to parallel the symptoms addressed in the Part 21. The failed four-way valve was returned to Anchor/Darling for evaluation. Anchor/Darling determined that the failure was unrelated to the problem described in the Part 21. The root cause of the failure was believed to be overpressurization of the valve body case due to improper isolation of the drain port during testing at the Anchor/Darling facility prior to shipment to Vogtle. Following the overpressurization at Anchor/Darling, which occurred in 1993, the Anchor/Darling test facility was modified to prevent recurrence of the problem. Because this failure has been the only reported inservice failure of this type attributed to the test process, Anchor/Darling did not believe that the failure represented a generic problem.

On December 29, 1993, another four-way valve, serial number 1606, which was known to be functioning correctly, was removed from MFIV 2HV-5227 for evaluation to determine whether the valve failure on December 2 was an isolated case, or if the Part 21 needed to be expanded. The licensee determined from on-site testing that several of the valve bores were outside the vendor's specifications and seemed to exhibit the characteristics of those valves described in the Part 21. The licensee then shipped the

valve to Anchor-Darling for evaluation. Anchor-Darling determined that the valve body bores were out of tolerance but that there was no evidence of gross distortion as described in the Part 21.

The second inservice four-way valve failure occurred on March 25, 1994. Again the failure occurred on MFIV 2HV-5227, but this failure was on a series 1606 four-way valve. The licensee plans to return the failed valve to the vendor for failure analysis. The vendor will then decide what actions should be taken regarding a revision to the original Part 21. The inspectors will continue to monitor the licensee's evaluation and corrective actions regarding MFIV 4-way valve failures.

c. Falsification of Battery Maintenance Data Sheet

On April 3, 1994, at approximately 4:00 a.m., an electrician was dispatched to the on-site nuclear warehouse to take voltage readings, per Procedure 27915-C, General Battery Maintenance, on a spare 1E train "D" battery cell which was on an equalize charge. The battery cell was being maintained in a standby condition for use in the plant should an in-service battery cell fail. Step 4.5.4.5 of Procedure 27915-C directs that the "equalize" potentiometer on the front of the single cell charger be adjusted to 2.39 to 2.41 volts. Step 4.5.4.6 then directs that the "as-left" voltage be recorded on the procedure data sheet. The electrician recorded the "as-found" and "as-left" voltages as 2.54 on the data sheet. Again at 8:00 a.m. on April 3, the same electrician took voltage readings on the same battery and again logged the "as-found" and "as-left" voltages as 2.54. At 9:00 a.m. a second electrician took the voltage readings and also confirmed them to be 2.54 volts. He recognized the voltage discrepancy and initiated action to troubleshoot the problem. The deficient condition was subsequently identified as a disconnected negative sensing lead. The disconnected lead was repaired and the voltage was adjusted to 2.41 volts.

Four days later, on April 7, another electrician, during a review of the MWO package associated with this battery equalize evolution, noted the out-of-tolerance voltage readings for April 3 and advised his supervisor. Later that morning on April 7, the electrician, who recorded the April 3 values, was shown the MWO package containing the out-of-tolerance readings, and while the MWO package was in his possession, he lined-out the out-of-tolerance reading of 2.54 volts, inserted the value of 2.41 volts, and dated his correction as April 3. Subsequent licensee interviews with the electrician indicated that he was aware that the voltages exceeded the procedural guidance and that he knowingly took no action to correct the condition or to inform his supervisor.

The inspector reviewed the MWO and procedure related to this event and discussed the event with Maintenance management. The

inspector concluded that there was no safety significance to this event since the battery cell was not installed in plant equipment and was in a standby condition in the warehouse. The inspector further concluded that the electrician involved initially failed to follow procedure when he failed to take action to correct a voltage reading which was out-of-tolerance. His reading of 2.54 volts was subsequently confirmed to be correct by a second electrician who did take action to correct the discrepancy. The significance of this event occurred on April 7, when the first electrician willfully altered his April 3 data sheet entry to reflect an acceptable voltage reading of 2.41 volts.

This falsification of data event was brought to the inspector's attention by licensee management. Upon discovery of the falsification by the licensee, plant access for the involved electrician was revoked and disciplinary action was taken. The inspector noted that the licensee took prompt corrective actions. Based on this review the inspector considered this to be an isolated event. This item is identified as Unresolved Item 50-424,425/94-09-01, Falsification of Battery Maintenance Data Sheet, pending further NRC management review.

d. Review of Increased Reactor Coolant Pump Vibration Indications

Since the start-up of Unit 2, following refueling outage 2R3 in October 1993, RCP 2 on Unit 2 (RCP 2-2) has experienced relatively high vibration compared to the other Unit 2 RCPs. Vibration measured at the pump shaft of RCP 2-2 has been fairly stable at 10 to 12 mils which compares to pump shaft vibration levels of 2 to 7 mils for the other RCPs.

The inspector reviewed vibration trend data and the licensee's evaluation and investigation of the RCP 2-2 vibration issue with maintenance engineering and Westinghouse personnel. The current RCP 2-2 pump shaft vibration remains satisfactory and continues to operate below the alert levels specified by the pump vendor instruction manual. The vendor instruction manual specifies an alert level of 15 mils and recommends initiating a root cause investigation at this level. Although vibration has not reached the alert level, the licensee has initiated increased monitoring, contacted the pump vendor, and initiated an investigation of the cause.

The licensee's corporate engineering staff and an industry pump vibration consultant have concluded that the most likely causes of the increased vibration may be due to a pump balancing issue or due to the pump operating near its critical speed. The pump vendor initially suspected that the pump impeller was wobbling due to slipping at the shaft keyway. The licensee disagreed with this conclusion based on pump testing data that was obtained on January 19, 1994, when the unit was shutdown. Based on a review of this data, the licensee determined that the impeller was not loose on

the shaft. The licensee is evaluating performing additional pump testing during the next refueling outage, and continues to monitor vibration data to determine which of these suspected causes is the most valid.

The inspector reviewed operating guidance for operators given in annunciator response procedures and the RCP operating procedure. The inspector verified that these procedures require the RCPs to be shutdown when the pump shaft vibration reaches 20 mils, which was consistent with vendor manual instructions.

The inspector observed maintenance engineering personnel perform weekly vibration measurement readings with digital acquisition equipment. The inspector also noted that the onsite vendor representative frequently monitors RCP vibration levels.

The inspector reviewed the balance history for each of Unit 2 RCPs, and noted that RCP 2-1 operates with no balance weights; RCP 2-2 operates with 2467 grams of balance weight distributed among coupling bolts 3,4,5 and 6; RCP 2-3 operates with 1266 grams of weight distributed on bolts 7 and 9; and RCP 2-4 operates with 529 grams of weight distributed on bolts 10 and 11.

The inspector determined that the licensee's efforts to monitor the vibration trend and to investigate the cause of the vibration are adequate. The inspector also observed that the licensee has consulted an industry pump vibration expert and the pump vendor to supplement corporate SCS engineering evaluation of the problem.

One Unresolved item was identified.

5. Follow-up (90712) (92700) (92702)

The Licensee Event Reports and violation listed below were reviewed to determine if the information provided met NRC requirements. The determination included: adequacy of description, verification of TS compliance and regulatory requirements, corrective action taken, existence of potential generic problems, reporting requirements satisfied, and relative safety significance of each event.

a. (Closed) LER 50-425/94-003, Personnel Error Results in Improper Temperature Readings.

The cause of this event was personnel error by a PEO when he failed to measure the temperature in room A008. He mistakenly measured the temperature in two different areas of room A009, rather than take separate measurements in rooms A009 and A008. The PEO was coached and reminded of the importance of attention to detail. Other appropriate personnel were advised of this event during shift briefings and the event will be addressed in operations continuing training.

Based upon the licensee's corrective actions, this item is considered closed.

- b. (Closed) LER 50-424/93-012, Failure to Perform Testing Results in Missed Technical Specification Surveillance.

The inspectors determined in NRC IR 50-424, 425/93-23, that this event was an isolated personnel error by the supervisor that authorized, reviewed and approved the completed test. The inspector verified, by reviewing Operations Reading Book sign off sheets, that all control room operations shifts had reviewed this LER. The inspector also verified that each shift also received a briefing that provided direction to identify and verify the correct train and component to ensure that the surveillance being performed is the surveillance that is specified. The inspector reviewed attendance sheets and sign off sheets for Maintenance and Health Physics/Chemistry Personnel and verified that these departments had reviewed this LER as part of continuing training.

Based on this review of completed corrective actions, this item is closed.

- c. (Closed) VIO 50-424/92-02-02, 10 CFR 50.9 Violation For Failure To Follow Procedure and Subsequent Creation of Data.

This violation was the second of two violations related to the same event. The first violation, 50-424/92-02-01, was closed in IR 50-424, 425/93-21. Because violation 92-02-02 was adequately addressed when violation 92-02-01 was closed, violation 92-02-02 is also considered closed.

No violations or deviations were identified.

6. Exit Meeting

The inspection scope and findings were summarized on April 22, 1994, 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>Description and Reference</u>
URI 50-424, 425/94-09-01	Falsification of Battery Maintenance Data Sheet

8. Abbreviations

ACOT	- Analog Channel Operational Test
AFW	- Auxiliary Feedwater System
CFR	- Code of Federal Regulations
DC	- Deficiency Card
DG	- Diesel Generator
ESF	- Engineered Safety Feature
GPC	- Georgia Power Company
HDP	- Heater Drain Pump
HP	- Health Physics
hrs	- Hours
I&C	- Instrumentation and Controls
IFI	- Inspector Followup Item
IR	- Inspection Report
ISEG	- Independent Safety Engineering Group
IST	- Inservice Test
LCO	- Limiting Condition for Operation
LER	- Licensee Event Report
MFIV	- Main Feedwater Isolation Valve
MWO	- Maintenance Work Order
NRC	- Nuclear Regulatory Commission
NPF	- Nuclear Power Facility
NSCW	- Nuclear Service Cooling Water System
OT	- Overtime
PEO	- Plant Equipment Operator
RCP	- Reactor Coolant Pump
RCS	- Reactor Coolant System
RO	- Reactor Operator
SAER	- Safety Audit and Engineering Review Group
SCS	- Southern Company Services
SNC	- Southern Nuclear Company
SRO	- Senior Reactor Operator
TS	- Technical Specifications
URI	- Unresolved Item
UV	- Undervoltage
VDC	- Volts direct current
VIO	- Violation
Xe	- Xenon
1R4	- Unit 1 Fourth Refueling Outage
2R3	- Unit 2 Third Refueling Outage