



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

Report Nos.: 50-424/90-25 and 50-425/90-25

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: September 29 - October 26, 1990

Inspectors: *B. R. Bonser* 11/21/90
B. R. Bonser, Senior Resident Inspector Date Signed
R. D. Starkey 11/21/90
R. D. Starkey, Resident Inspector Date Signed

Accompanied by: P. A. Balmain, Resident Inspector

Approved By: *K. E. Brockman* 11-21-90
K. E. Brockman, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine inspection entailed resident inspection in the following areas: plant operations, radiological controls, maintenance, surveillance, security, and quality programs and administrative controls affecting quality.

Results: One non-cited violation was identified for failure to take and analyze grab samples for a steam generator effluent release (paragraph 2e).

A strength was identified in the licensee's event investigation program and process which identified problems with the 2A diesel generator (paragraph 4c).

A continuing weakness was identified in the area of operator awareness and knowledge of operating status (paragraph 2e).

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DETAILS

1. Persons Contacted

Licensee Employees

- *S. Chesnut, Manager Technical Support
- *C. Christiansen, Safety Audit and Engineering Group Supervisor
- C. Coursey, Maintenance Superintendent
- *T. Greene, Assistant General Manager Plant Support
- H. Handfinger, Manager Maintenance
- K. Holmes, Manager Training and Emergency Preparedness
- *W. Kitchens, Assistant General Manager Plant Operations
- *R. LeGrand, Manager Health Physics and Chemistry
- *G. McCarley, Independent Safety Engineering Group Supervisor
- *R. Odom, Nuclear Safety and Compliance Manager
- *W. Shipman, Acting General Manager Nuclear Plant
- *J. Swartzwelder, Manager Operations

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

*Attended Exit Interview

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

2. Plant Operations - (71707)

- a. 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 and standing orders, lifted wires and jumper logs, 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 Technical Specifications. Direct observations were conducted of control room panels, instrumentation and recorder traces important to safety. Operating parameters were observed to verify they were within Technical Specification limits. The inspectors also reviewed Deficiency Cards 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. Tours included, but were not limited to, the turbine building, the auxiliary building, electrical equipment rooms, cable spreading rooms, NSCW towers, diesel buildings, AFW buildings and the low voltage switchyard.

During plant tours, housekeeping, security, equipment status and radiation control practices were observed.

The inspectors verified that the licensee's health physics policies/procedures were followed. This included observation of HP practices and review of area surveys, radiation work permits, postings, and instrument calibrations.

The inspectors verified that the security organization was properly manned and security personnel were capable of performing their assigned functions; persons and packages were checked prior to entry into the PA; vehicles were properly authorized, searched, and escorted with the PA; persons within the PA displayed photo identification badges; and personnel in vital areas were authorized.

b. Unit 1 Summary

Unit 1 operated in Mode 1 (Power Operations) at full power throughout the reporting period.

c. Unit 2 Summary

Unit 2 began this inspection period in Mode 6 (Refueling) with core unload in progress. Defueling was completed on September 30. The eighteen month inspections were completed on both emergency diesel generators followed by successful ESFAS testing. The main generator retaining rings were replaced, which increased the original scope of the outage. The unit entered Mode 6 on October 8 and core reload commenced. Core reload was completed on October 18. Mode 5 (Cold Shutdown) was entered on October 20. This inspection period ended with Unit 2 in Mode 5 awaiting the completion of maintenance activities before entry into Mode 4 (Hot Shutdown).

d. Operator Awareness

On October 18, 1990, with Unit 2 in Mode 6 and the RCS partially drained, water from the RWST was inadvertently added to the RCS, while performing SOP-13105-2, Section 4.4.6, Filling and Venting the SIS. This raised the level up to the reactor vessel flange. The reactor vessel head was in place but had not been tensioned. With the rise in water level to the vessel flange there was a possibility that the seating surface had been wetted and foreign material deposited on it. Another head lift was required to inspect the vessel O-ring and seating surface for water and cleanliness before tensioning could begin.

This event occurred when 2HV-8302A, the SI pump to hot legs 1 and 4 isolation valve, was opened. Water gravity flowed from the RWST into the RCS. Level rose to the flange level. The fill and vent procedure was being followed; however, it was flawed in allowing plant conditions that were not appropriate for adding water to the RCS. No caution in the procedure alerted the operator to this potential. When a steady stream of water did not come from the vent valve as expected, a quick analysis by an off-shift SS detected the problem and the fill of the RCS was secured.

This event alone was not safety significant; however, it did exemplify some problems in the control of operational activities which could become significant. The SS and RO were not adequately aware of the SI system fill and vent activities being performed. The on-shift RO did not monitor RCS water level adequately. The licensed RO performing the SI fill and vent was inadequately briefed before starting the valve line-up procedure; also, he assumed that the SS and the on-shift RO had been fully briefed.

The area of major concern was the lack of awareness on the part of the on-shift RO concerning the SI fill and vent operation. The licensed RO (not on shift) performing the fill and vent procedure manipulated valves on the control board, but was not questioned by the on-shift RO. Due to the perceived lack of need for concern by the on-shift RO, plant configuration changes were made and the on-shift RO was not fully aware of their significance. This resulted in RCS water level rising to the vessel flange without the on-shift RO detecting the flow to the RCS.

The licensee investigation into the event concluded there were five major causes: The written procedure was flawed and review of the procedure did not detect the flaw; self checking was not used to ensure that the intended action was correct before being performed; the adequacy of the briefing of all personnel involved was not confirmed prior to starting the job; communication between the on-shift RO and personnel performing the fill and vent was inadequate; and verification of RCS level was not performed. The licensee has proposed corrective actions which include revision of the fill and vent procedure, management action to ensure that operators continue to use a questioning attitude and ensure that their intended action is correct before it is performed, emphasis through training and procedure revisions on the exercise of control by licensed operators and increased awareness of the necessity to continuously monitor RCS water level during Mode 6 operations.

The resident inspectors have reviewed the event and the licensee's investigation and are satisfied with the conclusions and proposed corrective actions. The areas of operator awareness, knowledge of operating status, and attention to detail are of continuing concern and have been previously identified as a weakness to the licensee. They are again identified as a weakness in this report. Also, the

failure of the on-shift RO to question another licensed operator manipulating valves on the control board during the event, are of concern. The residents will continue to follow the licensee's corrective actions for this event.

A second example of inadequate operator awareness occurred on October 15, 1990. During a routine walkdown of the low voltage switchyard by the resident inspectors a "manlift" machine was observed parked near an insulator support on the Unit 2 side of the switchyard. When questioned, the on shift supervision was not aware of the existence of the "manlift" nor its purpose in being in the switchyard. Subsequent conversations revealed that the machine had been in the switchyard since the beginning of 2R1 for the placement and removal of transformer grounding straps. Vehicle access to the switchyard has been an area of concern since the March 20, 1990 Site Area Emergency. In this example, proper approval had apparently been granted for the placement of the "manlift" but personnel were unaware of its continued presence in the switchyard.

e. Unmonitored Release From Steam Generators

On September 19, 1990, with Unit 2 in Mode 5, the steam generator blowdown system, including the steam generator blowdown line effluent monitor, 2RE-0021, was tagged out as part of refueling outage activities. At that time, it was determined that entry into an LCO action statement was not necessary.

On September 27, 1990, in order to drain #3 steam generator, the tag-out was partially released. This partial release did not include 2RE-0021. The #3 Steam generator was subsequently drained to the WWRB. Although the licensee believes there were no radionuclides in the water drained from the steam generator, this drain down constituted an unmonitored release.

The licensee's investigation also revealed that on October 1, 1990, water from #4 steam generator was drained to the WWRB with 2RE-0021 out of service. The effluent monitor was discovered out of service on October 20. The licensee took immediate action to correct the deficiency. The two releases described above occurred while the monitor was out of service. Other releases may have occurred; however, there is no evidence to indicate this.

The action statement for TS 3.3.3.9, Radioactive Liquid Effluent Monitoring Instrumentation, allows effluent releases via this pathway to continue provided grab samples of the effluent are analyzed for radioactivity. Grab samples of the effluent were not taken. This failure to take and analyze grab samples for radioactivity with 2RE-0021 out of service is identified as non-cited violation (NCV) 50-425/90-25-01: Violation of TS 3.3.3.9 - Failure to Take and Analyze Grab Samples for a Steam Generator Effluent Release.

This licensee identified violation is not being cited because criteria in Section V.G.1 of the NRC Enforcement Policy were satisfied. The actions taken by the licensee are considered acceptable for this incident. The licensee plans to document their corrective actions in a LER. Also, as required by TS, the next Semiannual Radioactive Effluent Release Report must explain why 2RE-0021 was inoperable for more than 30 days per TS action statement 3.3.3.9b.

f. ESF Actuation

On October 26, 1990, with Unit 2 in Mode 5, a partial ESF actuation occurred when several train B containment isolation valves automatically shut and were unable to be repositioned. The actuation occurred during restoration from surveillance procedure 24831-2, Reactor Trip and ESF Logic Response Time Test. The licensee initially determined that I&C personnel missed a step in the procedure. The missed step instructed I&C personnel to have Operations restore train B blocks before removal of jumpered slave relays. These relays were already energized due to previous testing. The residents are continuing to monitor the licensee's evaluation of this event.

One non-cited violation was 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.

On September 19, 1990, the licensee performed surveillance procedure 54055-2, Rev. 2, Train A Diesel Generator and ESFAS Test. The inspector witnessed the LOSP/concurrent with SI and safety injection actuation portions of the surveillance. The licensee identified several minor exceptions during the test which were subsequently retested or resolved. No deficiencies were identified with the surveillance or with the resolution of the test exceptions.

Listed below are surveillances which were either reviewed or witnessed:

| <u>Surveillance No.</u> | <u>Title</u> |
|-------------------------|----------------------------|
| 14460-1, Rev. 12 | ECCS Flowpath Verification |

| <u>Surveillance No.</u> (Continued) | <u>Title</u> |
|--|--|
| 14803-1, Rev. 7 | CCW Pumps & Discharge Check Valves IST |
| 14804-1, Rev. 8 | Safety Injection Pump IST |
| 14980-1, Rev. 22 | Diesel Generator Operability Test |

No violations or deviations were identified.

4. Maintenance Observation (62703)

- a. The inspectors observed maintenance activities, interviewed personnel, and reviewed records to verify that work was conducted in accordance with approved procedures, Technical Specifications, and applicable industry codes and standards. The inspectors also verified that redundant components were operable, administrative controls were followed, clearances were adequate, personnel were qualified, correct replacement parts were used, radiological controls were proper, fire protection was adequate, quality control hold points were adequate and observed, adequate post-maintenance testing was performed, and independent verification requirements were implemented. The inspectors independently verified that selected equipment was properly returned to service.

Outstanding work requests were reviewed to ensure that the licensee gave priority to safety-related maintenance activities:

- b. The inspectors witnessed or reviewed the following maintenance activities:

| MWO No. | Work Description |
|----------|--|
| 19004205 | Repair 1HV5094 MDAFW Pump B Suction Isolation Valve From CST 1 |
| 29003903 | Repair Of Hydraulics System 2HV3016B-Main Steam Isolation Valve Operator |

- c. On October 9, 1990, with Unit 2 in Mode 6, DG 2A was started for a 24 hour run as part of the ESFAS testing. During the run, operators observed a "DG 2A Vibration Trip" annunciator on the local control panel; however, the diesel did not trip. Approximately 36 minutes later, with troubleshooting in progress, the DG 2A tripped with no annunciator indicating the reason for the trip.

The licensee's investigation into this failure identified that one of the four vibration sensors had actuated below its trip setpoint and initiated a trip signal to the air logic trip circuit. The trip signal had been delayed because an orifice in the air control logic trip circuit was too large. This allowed too much air into the circuit once it was activated resulting in too high an air pressure for an immediate trip. The orifice in the trip circuit was replaced

with an orifice having a smaller opening allowing the logic circuit air pressure to drop and initiate a DG trip when a valid signal was present. In addition to the orifice problem, it was found that another vibration sensor would not initiate a trip and a CALCON temperature sensor had a setpoint that appeared to be set too low. DG-2A was returned to service on October 17, 1990.

The protective functions which failed during this diesel run were non-emergency operation protective devices. The protective devices which function to shutdown the diesel during an SI actuation or emergency bus undervoltage were not affected.

The licensee's response to this event was effective in that the problem was identified, the scope determined, and corrective actions were implemented. The licensee's event investigation program and process which identified the problem with the diesel is considered a strength.

No violations or deviations were identified.

5. Review of Licensee Reports (90712)(92700)

The below listed Licensee Event Report (LER) was reviewed to determine if the information provided met NRC requirements. The determination included the adequacy of the description, the verification of compliance with Technical Specifications and regulatory requirements, the corrective action taken, the existence of potential generic problems, the satisfaction of reporting requirements, and the relative safety significance of each event.

- a. 50-424/87-83, Rev. 0, "Use Of Alternate Instrument Results In Inadequate Verification Of RWST Temperature."

The root cause of this event was procedural inadequacy. The appropriate procedures, 14000-1 and 2, have been revised to impose the necessary administrative limits to allow continued use of TIS-10980. Additionally, instrument 2TIS-10980 has been repaired and 2TI-10982 has been installed.

No violations or deviations were identified.

6. Plant Startup from Refueling (71711)

The inspectors conducted system walkdowns of portions of the 2B Diesel Generator and Safety Injection system following their return to service. The following procedures were used:

- | | |
|-----------------|-----------------------------------|
| 11105-2, Rev. 4 | Safety Injection System Alignment |
| 11145-2, Rev. 4 | Diesel Generator Alignment |

No deficiencies were identified during the walkdowns. All components examined were determined to be in their required positions.

No violations or deviations were identified.

7. Followup On Previous Inspections Findings (92701,92702)

(Closed) VIO 50-424/90-10-01, "Failure To Ensure Proper Routing And Slope To The RCS Temporary Level Indication Tygon Tube." On April 8, 1990, the licensee failed to follow Engineering Procedure 54840-1-1-90-2 by allowing an air bubble to develop in the RCS tygon tube level indicator. This caused indicated RCS level to read approximately 8 feet higher than actual RCS level. The level indication error was promptly corrected after the discrepancy was discovered. Procedure 54840-1 was revised to include a precaution concerning loop seals and additional steps to direct the fill and vent of the tygon tube. During 2R1 a permanent system was installed in Unit 2 which consists of hard pipe and a short vertical run of tygon tubing. This new system is easily accessible and has clearly marked elevation divisions. A similar system will be installed in Unit 1 during the next refueling outage.

(Closed) Part 21 Report, 50-424,425/P21-89-12, "Limitorque Corporation Pre-1981 SMB-000 And Pre-1976 SMB-00 Cam-type Torque Switches Can Fail As A Result Of Stationary Contact Screws Loosening On Side Of Torque Switch Which Had Fiber Spacers." The licensee has replaced most of the subject valve actuators and the remainder are scheduled to be replaced on both units by the end of the 1990 refueling outages.

(Closed) Part 21 Report, 50-424,425/P21-89-13, "Cooper Energy Services Potential Problems With EDG Air Start Valves. Manufacturer Has Redesigned The Valve." VEGP has ordered the redesigned air start valves with an expected receipt date of December 5, 1990. Georgia Power Company has initiated a Request for Engineering Assistance (REA) to evaluate the seismic and environmental qualification of the redesigned valve. The redesigned valves will not be installed until the REA is completed.

(Closed) Part 21 Report, 50-424,425/P21-90-04, "Rosemount Resistance Bridgescan Exhibit Premature Long Term Degradation Under Certain Combinations Of Humidity, Power And Duration." VEGP verified with Rosemount, Inc. that Vogtle was not supplied with Model 710 Trip Calibration units or 414 E/F resistance bridges. Therefore, this part 21 is not applicable.

During an operator licensing exam conducted during July, 1990, Emergency Operating Procedures 19013-C and 19251-C were found to lack necessary instructions to provide adequate protection for the RHR and Containment Spray Pumps respectively. The licensee has revised these procedures to provide additional "response not obtained" instructions to the operator to stop the applicable train pump if the associated train related valves cannot be positioned properly.

8. Waivers of Compliance

- a. On June 6, 1990, to avoid entry into TS 3.0.3, the licensee requested and received a waiver of compliance from the requirements of TS 3.3.2, Action Statement 27, for six hours. This allowed testing of the Control Room Emergency Filtration System (CREFS). On May 29, 1990, the licensee discovered that ESFAS response time summations 54800-1 and 54800-2 for control room emergency filtration system (CREFS) actuation did not account for diesel generator and sequencer loading sequence block delays as required by TS 4.3.2.2 and definition 1.12. This deficiency was documented by the licensee as DC 1-90-260. The licensee determined that obtaining a complete response time for the CREFS would require measuring the DG sequencer loading delays and fan response times. However, the measurement of the CREFS fans response times could only be accomplished after shutting down the two operating CREFS trains. This would necessitate a deliberate entry into TS 3.0.3. The licensee completed testing on June 7, 1990 using procedure TENG 90-20, Control Room ESF Fan Response time test.
- b. On October 3, 1990, the licensee requested and received a waiver of compliance from the requirements of TS 3.6.1.1, Primary Containment Integrity; TS 3.6.1.2, Containment Leakage; and TS 3.6.3, Containment Isolation Valves for up to an 8 hour period. This allowed testing of a containment spray containment isolation valve in Mode 1. On September 19, 1990, the licensee identified (DC 1090-370) that on March 14, 1990, a Unit 1 containment isolation valve, 1-1206-V6-016, in the containment spray system had not received an LLRT during 1R2, following an ISI. The LLRT should have been performed following the completion of procedure 28716-C, Westinghouse Style 'B' Check Valve ISI Surveillance, Rev. 5, on March 14. An LLRT had been performed on the valve on March 8, 1990. The subsequent ISI on March 14 did not specify that an LLRT should be conducted following removal and replacement of valve internals. The LLRT was successfully completed on October 4, 1990, within the 8 hour time constraint of the waiver. The valve was declared operable and the TS 72 hour LCO was exited.
- c. On October 14, 1990, the licensee requested and received a waiver of compliance from TS 3.9.8.1, Residual Heat Removal and Coolant Circulation, for up to one hour per eight hour period until an ECCS flow measurement surveillance could be completed. The ECCS flow measurement was required by TS 4.5.2.h.3. The licensee requested the waiver upon discovering that running the surveillance with one RHR pump and injecting through two loops did not provide a flow rate greater than or equal to 3788 gpm as required by TS. In order to run the test through all four injection lines RHR shutdown cooling would have to be secured. As written, the Vogtle TS only allowed the performance of this test (RHR injecting through all 4 loops) in Mode 5 with the loops filled or with the reactor defueled. The licensee determined that performance of the test was desirable in the plant configuration at the time (Mode 6) over performing the test in

Mode 5 or unnecessarily defueling the reactor. As compensatory action, the licensee ensured that RCS temperature was less than 115 degrees F, that both trains of RHR were operable, and that water level in the reactor cavity was at least 23 feet above the reactor vessel flange, prior to commencing the test. In addition, the licensee felt the waiver was not safety significant because TS 3.9.8.1 already contained a footnote which allowed removal of the RHR train from service for up to 1 hour per 8-hour period during the performance of core alterations in the vicinity of the reactor vessel hot legs. The waiver of compliance was granted, the surveillance test was performed with satisfactory results and one train of RHR was returned to shutdown cooling mode within 1 hour on October 15, 1990.

9. Followup of Events

After the March 20, 1990, Site Area Emergency, the Resident Inspectors were tasked with followup of certain licensee corrective actions. The specific corrective actions are as follows: (1) The licensee has written a site specific Safety Manual which includes the requirement, Section VII - Mobile Equipment, of a flagman for any vehicle larger than a pick-up truck when operating in reverse. General Employee Training, lesson plan GE-LP-00116-15-C, was revised to include training on conditions when a flagman is required. (2) Procedures 20407-C, Maintenance Conduct of Operations added a step that requires that welding machines and other materials shall be staged at the East and West ends of the turbine building, whenever possible, to avoid traffic in the low voltage switchyard. (3) Licensed operator requalification training incorporated additional training on diesel generator sequencer operation. All pertinent licensed operator initial training lesson plans will be revised by the end of 1990 to reflect this additional sequencer training. On March 23, 1990, an entry was made in the Control Room Shift Briefing Book to explain operator actions to be taken when a situation requires a sequencer reset. (4) Procedures 10001-C, Logkeeping and 00057-C, Event Investigation, were revised to include steps concerning proper acknowledgement and recording of annunciators prior to resetting those annunciators.

10. Exit Interview (30703)

The inspection scope and findings were summarized on October 26, 1990, with those portions indicated in paragraph 1. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during this inspection.

| <u>Item Number</u> | <u>Description and Reference</u> |
|--------------------|---|
| NCV 425/90-25-01 | Violation of TS 3.3.3.9 - Failure to Take and Analyze Grab Samples for a Steam Generator Effluent Release |

11. Acronyms And Initialisms

| | |
|-------|--|
| AFW | Auxiliary Feedwater System |
| CCW | Component Cooling Water System |
| CREFS | Control Room Emergency Filtration System |
| CST | Condensate Storage Tank |
| DC | Deficiency Cards |
| DG | Diesel Generator |
| ECCS | Emergency Core Cooling System |
| ESF | Engineered Safety Features |
| ESFAS | Engineering Safety Features Actuation System |
| GE | General Electric |
| GPC | Georgia Power Company |
| HP | Health Physics |
| HV | High Voltage |
| ISI | Inservice Inspection |
| IST | Inservice Testing |
| LCO | Limiting Conditions for Operations |
| LER | Licensee Event Reports |
| LLRT | Local Leak Rate Test |
| LOSP | Loss of Offsite Power |
| LP | Low Pressure |
| MDAFW | Motor Driven AFW Pump |
| MWO | Maintenance Work Order |
| NCV | Non-cited Violation |
| NPF | Nuclear Power Facility |
| NRC | Nuclear Regulatory Commission |
| NSCW | Nuclear Service Cooling Water System |
| PA | Protected Area |
| RCS | Reactor Coolant System |
| REA | Request for Engineering Assistance |
| Rev | Revision |
| RHR | Residual Heat Removal System |
| RO | Reactor Operator |
| RWST | Refueling Water Storage Tank |
| SI | Safety Injection System |
| SIS | Safety Injection Signal |
| SMB | (prefix to melamin. torque switches) |
| TS | Technical Specification |
| VEGP | Vogtle Electric Generating Plant |
| VIO | Violation |
| WWRB | Waste Water Retention Basin |