



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W., SUITE 2900
ATLANTA, GEORGIA 30323-0189

Report Nos.: 50-424/94-07 and 50-425/94-07

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 7-11, 1994

Inspector: M. Thomas 4-6-94
M. Thomas Date Signed

Accompanying Personnel: C. Casto, Section Chief (March 9-11, 1994)
H. Whitener, Reactor Inspector
G. Wiseman, Reactor Inspector (March 7-8, 1994)

Approved by: C. Casto 4-6-94
C. Casto, Chief Date Signed
Test Programs Section
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope:

This routine, announced inspection was conducted in the areas of design changes and plant modifications, engineering and technical support activities, and followup on previously identified inspection findings.

Results:

In the areas inspected, violations or deviations were not identified.

- Modifications reviewed were technically adequate with sufficiently detailed 10 CFR 50.59 safety evaluations. Adequate post modification test requirements were specified.
- The licensee had taken actions to address the weakness identified in the previous SALP report concerning the control of temporary modifications. Effective controls governed the installation and removal of temporary modifications.
- Drawing changes reviewed were clear and accurate.

- Management initiatives were addressing the area of backlog reduction.
- Documented justifications for previously voided or canceled design change requests and design change packages contained sufficient details.
- The licensee had a process for prioritizing and scheduling modifications important to reactor safety.
- The various engineering groups were involved in the identification and resolution of problems in the support of reliable plant operation.
- Engineering responses to deficiency cards were timely with reasonably detailed and descriptive evaluations.
- Inspector Followup Items (IFI) 424, 425/92-24-01, and IFI 424/93-08-01 were reviewed during this inspection and closed.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *J. Beasley, General Manager Nuclear Plant
- *W. Burmeister, Manager, Engineering Support
- *C. Christiansen, Supervisor, Safety Audit and Engineering Review
- *W. Copeland, Supervisor, Materials
- *J. Ealick, Engineering Supervisor, Engineering Support
- *W. Gabbard, Nuclear Specialist I, Technical Support
- *M. Griffis, Manager, Plant Modifications and Maintenance Support
- *K. Holmes, Manager, Operations
- *G. Hooper, Engineering Supervisor, Technical Support
- *D. Huyck, Manager, Nuclear Security
- *P. Kochery, Plant Engineering Supervisor, Plant Modifications and Maintenance Support
- *R. LeGrand, Manager, Health Physics/Chemistry
- *G. McCarley, Supervisor, Independent Safety Engineering Group
- *J. Roberts, Emergency Preparedness Coordinator
- *M. Sheibani, Supervisor, Nuclear Safety and Compliance
- *H. Williams, Nuclear Specialist, Operations
- *J. Williams, Supervisor, Work Planning

Other licensee employees contacted during this inspection included engineers, operators, craftsmen, and administrative personnel.

NRC Resident Inspectors

- P. Balmain, Resident Inspector
- *R. Starkey, Resident Inspector

*Attended exit meeting

Acronyms and initialisms used throughout this report are listed in the last paragraph.

2. Design Changes and Plant Modifications (37700)

a. Plant Modifications to Improve Reactor Safety

The inspectors reviewed the initiatives taken by the licensee to identify and implement plant modifications to improve reactor safety and plant operation. Documentation reviewed included: the list of design change packages (DCPs) and minor departures from design (MDDs) implemented since January 1993 (Units 1 and 2); the list of DCPs implemented during the 1994 non-outage work period (Units 1 and 2); the proposed list of DCPs for the Unit 1 Cycle 5 refueling outage; and the 1994 and 1995 Design Change Request (DCR) Work List. The inspectors also held discussions with licensee personnel regarding the DCR prioritization process.

The DCR Work List consisted of design requests submitted to corporate design engineering for the preparation of DCPs. The DCR Work List was developed by the Work List Prioritization Committee. The Work List Prioritization Committee consisted of the following; Engineering Support Manager, Technical Support Manager, Maintenance Manager, Plant Modifications and Maintenance Support (PMMS) Manager, Operations Manager, Health Physics and Chemistry Manager, Nuclear Security Manager, Outage and Planning Manager, Nuclear Maintenance and Support Manager (Corporate), and the Engineering Manager (Corporate). The DCRs and the priority codes on the Work List were initially assigned by the Engineering Support Manager prior to being reviewed by the Work List Prioritization Committee. After being reviewed by the committee, the DCR Work List was approved by the General Manager Nuclear Plant (GMNP) and the Vogtle Vice President.

During a previous NRC inspection (50-424, 425/92-24), the inspectors noted that the prioritization process and the responsibilities of the departments or individuals involved in the process were neither documented nor proceduralized. This was considered a weakness in the licensee's prioritization process. The inspectors noted during this inspection that the process was still not documented or proceduralized.

The inspectors reviewed the above DCP and DCR lists and concluded that, although the process was not proceduralized, the items on the various lists appeared to be properly prioritized and scheduled to ensure that design changes affecting nuclear safety were being implemented.

b. Planning, Development, and Implementation of Plant Modifications

The inspectors reviewed the DCPs and MDDs listed below to: (1) determine the adequacy of the safety evaluation screenings and the 10 C-R 50.59 safety evaluations, (2) verify that the modifications were reviewed and approved in accordance with Technical Specifications and applicable administrative controls, (3) verify the modifications were installed and had proper signoffs, (4) verify that applicable design bases were included and design documents (drawings, plant procedures, FSAR, etc.) were revised, (5) verify that the modifications were properly turned over to operations, and (6) verify that both installation testing and post modification test requirements were specified and that adequate testing was performed.

The inspectors reviewed selected administrative procedures relative to the design changes and modifications to determine the adequacy of the controls governing the design change process.

The following procedures were reviewed:

- 00056-C Safety and Environmental Evaluations
- 00101-C Drawing Control
- 00307-C Temporary Modifications
- 00400-C Plant Design Control
- 00402-C Licensing Document Change Request
- 50006-C Preparation of Design Change Requests
- 50007-C Engineering Review of Design Change Packages
- 50008-C DCP Implementation and Closure

The inspectors concluded from reviewing the above procedures that adequate controls were in place to ensure effective implementation of design changes.

The DCPs were prepared by corporate engineering. The MDDs were prepared onsite by the Engineering Support Department. The inspectors reviewed the following DCPs and MDDs:

- DCP 87-V1E0071 Installation of Equipment in Auxiliary Building to Convert Room 123 Into an Equipment Decontamination Facility
- DCP 88-VIN0076 Delete RHR Hot Leg Isolation Valve Auto Closure Interlock (ACI)
- DCP 92-VIN0159 Replacement of Auxiliary Feedwater Check Valves: 1-1302-U4-113, 114, 115, 116
- MDD 91-VCM019 Modify Access Control To Hot Machine Shop
- MDD 91-VCM056 Modify Occupancy of Room 119 From the Personnel Monitoring Room to the Clearance and Tagging Area

The inspectors reviewed affected FSAR drawings, Fire Hazards Analysis (FHA), FSAR tables and figures, lesson plans for operator training, and changes to the operations training simulator to determine if the applicable documents and training materials had been updated to accurately reflect the modifications.

The inspectors concluded that the modifications reviewed were technically adequate with sufficiently detailed 10 CFR 50.59 safety evaluations. Adequate post modification test requirements were specified and adequate testing was performed. The

modifications were prepared in accordance with the applicable administrative controls.

c. Temporary Modifications

The inspectors reviewed the licensee's temporary modification (TM) process to determine its adequacy for controlling and tracking temporary changes to the plant's configuration. TMs were prepared by the system engineers within the Engineering Support Department. Procedure 00307-C, "Temporary Modifications," provided requirements and controls for the preparation, installation, and removal of TMs. The requirements listed previously in paragraph 2.b. above for DCPs and MDDs were also applicable to TMs and were reviewed. The TMs were examined to verify that: (1) adequate safety evaluations were performed; (2) testing was specified and performed where applicable; and (3) TMs installed greater than 90 days were controlled in accordance with procedure 00307-C. The following active TMs were reviewed:

TM 2-92-030	Install Splash Guard Over the Inboard Leak-Off Seal for the TDAFW Pump
TM 93-V1T024	Isolate Transformer High Temperature Switch
TM 93-V1T029	Install Jumper to Defeat Incorrect Level Signal
TM 93-V1T040	Route Hose off the Vent and Drain Lines of the NSCW Makeup from the Well Water Storage Tank
TM 93-VAT043	Install Replacement Air Operated Diaphragm Valve
TM 93-V2T051	Route Hose off the Vent and Drain Lines of the NSCW Makeup from the Well Water Storage Tank
TM 93-V1T052	Install Proximity Probes on the Outboard Side of the S/G Feed Pump Turbine 1A

The inspectors determined from reviewing the above TM packages that the technical content and quality were good. The safety evaluations provided sufficient detail for determining the safety impact of the TM on plant operations. The inspectors performed field inspections for some of the TMs and verified that the TMs were installed in accordance with technical requirements specified in the applicable TM packages and procedure 00307-C. In addition, the inspectors noted that the licensee had taken actions to address the weakness identified in the previous SALP report (50-424, 425/93-01) concerning the control of TMs (i.e., TMs installed for long periods). The length of time for TMs being installed had been reduced.

The inspectors concluded that the licensee's process for the installation, control, and removal of TMs was adequate.

d. Drawing Control

Plant design control for drawings was established and maintained through methods found in two plant procedures. Methods for making plant design changes, including drawing control, were controlled by Procedure No. 00400-C, "Plant Design Control." This procedure defined critical drawings in the DCP process as all: Single-Line, Elementary, and Piping and Instrumentation diagrams. Methods used to control drawings were given in Procedure No. 00101-C, "Drawing Control." This procedure defined the methods used for receiving, processing, and issuing the latest approved vendor and domestic drawings and changes.

To verify that drawing changes were issued according to the methods in procedures 00400-C and 00101-C, the inspectors selected several DCPs for review. Each DCP was reviewed to verify that drawing changes were accurately and clearly made. The following DCPs were reviewed to verify proper drawing changes were made:

- 88-V1N0076-0-1 Deletion of the Auto Closure Interlock for the RHR system inlet isolation valves
- 89-VCN0118-0-2 Replacement of all existing surge arresters on 4160/480 volt transformers to provide more protection for the Dry type transformers due to surges
- 91-V2N0157-1-1 Remove pressure control valves from charging pump discharge and modify alternate mini-flow logic to control discharge pressure
- 91-V2N0205-0-1 Rerouting the high pressure leakoff line and low pressure leakoff line on the AFW system to improve draining and reduce back pressure
- 92-V1N0143-0-1 Installation of conical-shaped restriction flow orifices to the slow fill lines of the Unit 1 NSCW system to lessen hydraulic transients in the lines
- 93-V1N0016-0-1 Upgrade existing Nuclear Instrumentation System to include a bypass panel in each of the four protection bays
- 93-V1N0064-0-1 Installation of an orifice in Centrifugal Charging Pump "B" discharge line to maintain design performance after impeller replacement

Sample drawings associated with each DCP were reviewed to verify that the changes were incorporated into the latest revision of the drawings. Each type of critical drawing along with some non-critical drawings were reviewed. This included: Piping and

Instrumentation, Elementary, One-Line, Wiring, Process Control, Isometric, and Vendor drawings. For all of the drawings, as-built notifications (ABNs) were issued and the associated changes were incorporated into the latest revision of the drawings. In all of the drawings reviewed, the inspectors found the changes to be clear, accurate, and legible.

There were primarily two types of critical drawings available to the operators in the Unit 1 and Unit 2 control rooms. Each control room had electrical Single-Line and Piping and Instrumentation drawings. The drawings were paper versions on sticks located in the immediate area of the control boards. Those drawings associated with the DCPs listed above were reviewed. The inspectors reviewed the control room drawings to verify that they were current, usable, and legible. Some of the drawings were found frayed, torn, or partially folded. These conditions did not hamper the usefulness of the drawings. Also, ABNs associated with the drawings were found loosely attached. However, the condition did not hamper the usefulness of the ABNs or of the associated drawings. Otherwise, the inspectors found the drawings accurate, usable, and legible. For those DCPs reviewed, all of the design changes were reflected in the control room copy.

Drawing backlog trends were inspected. The licensee was meeting the 30-day requirement for closing ABNs. Trends indicated an increase in ABNs after outages and subsequent reductions in open ABNs over the months after the outage. In February 1994, there were approximately 14 ABNs opened and 14 ABNs closed. The licensee was meeting their requirement on ABN disposition and maintaining the backlog at a minimum.

The inspectors concluded that the licensee's controls for updating and maintaining critical drawings were being adequately implemented.

Violations or deviations were not identified in the areas inspected.

3. Engineering and Technical Support Activities (37700)

a. Organization and Staffing

Engineering and technical support were provided by both onsite and corporate organizations. Onsite support was provided mainly by the Engineering Support Department (which included the system engineers), Technical Support Department, and the PMMS Department. The inspectors held discussions with licensee personnel and reviewed documentation of selected plant activities to evaluate the engineering involvement and support of day-to-day plant operations. This support included preparing MDDs and TMs, DCP implementation, responding to deficiency cards, performing safety

evaluations, etc. The inspectors reviewed staffing and determined that the current staffing levels within the various departments appeared to be adequate to provide support to the plant.

b. Engineering Backlogs

The inspectors reviewed the status of engineering backlogs to determine if sufficient engineering resources and management attention have been focused on this area to prevent the buildup of a large engineering work backlog.

Documents reviewed in this area included, but were not limited to the following:

- Trend plots of MWO, RER, MDD, and DCR/DCP backlogs
- Procedure 50006-C, Preparation of Design Change Requests
- Procedure 50007-C, Engineering Review of Design Change Packages
- Procedure 50008-C, DCP Implementation and Closure
- Desktop Instructions, Design Change Justification/Priority
- Listing of DCRs/DCPs Implemented/Closed for Period of November 1, 1993 to February 17, 1994
- 1993 Engineering Support Goals
- DCP cancellation package for 88-VIN0085 and 89-VIN0319, Modification of Check Source Holder
- DCP cancellation package for 89-V2E0067, Modification of Solenoid Valves in Sprinkler Systems
- DCR cancellation package for 91-VIN0235, Relocation of Flow Orifices in the Chemical and Volume Control System
- DCR cancellation package for 91-VIN0144, Prevent Flooding of Pipe Trenches in Diesel Generator Building
- DCR cancellation package for 87-VIN0444, Upgrade Performance Capability of Plant Computer

The inspectors found that the trend plots for 1993 showed a reduction in the overall engineering backlogs. From December 1992 to December 1993, Request for Engineering Reviews (RERs) backlog was reduced from 71 to 29; the MDD backlog was reduced from 192 to

146; and the DCR backlog was reduced from 540 to 264. In addition, to the reduction in the number of documents open, the average time that documents remained open was significantly reduced.

The inspectors observed that a few DCPs and a number of DCRs had been closed out by cancellation. The inspectors reviewed the cancellation packages listed above and determined that the licensee had provided adequate justification for the cancellations.

The inspectors concluded that engineering resources and management attention have been focused to control the build up of large engineering backlogs.

c. Problem Identification and Resolution

The process used by the licensee to identify and track routine plant problems is the Deficiency Card (DC) system. Anyone in the plant can initiate a DC. The DC subsequently goes to the shift supervisor for determination of immediate reportability and plant operability. The card then goes to the Technical Support (TS) Department for further evaluation of reportability. A part of the TS review is to determine if the problem or condition is a plant deficiency according to procedure 00150-C, Deficiency Control, and to assign the DC to the appropriate department for cause determination and resolution. A copy of the DC is forwarded to the Plant Review Board (PRB) for their concurrence with the reportability determination and review of potential hazards to nuclear safety. The completed DC form and long term resolutions to prevent recurrence of the problem are returned to the TS Department to be entered into the data base and tracked to closure. Short term corrective actions to place the plant in a safe condition are taken by the shift supervisor immediately on receipt of a DC.

The inspectors interviewed engineering personnel and reviewed plant records to evaluate the determination of plant operability, reportability and involvement of engineering in support of day-to-day plant operations. Records reviewed included, but were not limited to the following:

- Procedure No. 00150-C, Deficiency Control

This procedure prescribes the responsibilities for identifying, evaluating, reporting, and dispositioning deficiencies, the distribution path, and time limitations.

- Deficiency Card Status (January 1994 - February 1994)

Weekly report by TS staff to management identifying by department any overdue DC resolutions.

- Management Attention Items (January 1994 - February 1994)
Weekly report by TS staff to management identifying any overdue open items or commitments in the DC data base tracking system.
- Deficiency Control and QA/NRC Findings Trend Report (1993)
Quarterly statistical analysis of DCs, Audit Findings Reports (AFR), and NRC Findings for adverse trends. Additionally, TS reviews the DCs, AFRs and NRC Findings and compares results with previous quarters to identify areas of concern and provide management with early warning of degrading performance.
- Deficiency Card Log (January 1, 1993 to February 16, 1994)
This report identifies the DCs issued in this time frame, the discovery and closure dates, and the department considered to be responsible for the deficient area.

The inspectors considered the above status and statistical reports to be a useful tool for management oversight.

In addition to the above documents, the inspectors also reviewed the following DC packages:

- DC 1-93-211 Valve Disc not Traceable
- DC 2-94-006 Containment H₂ Monitor Inoperable
- DC 1-94--006 Fire From Fan Bearing Overheating
- DC 1-93-293 Control Room Pressure Boundary Breached
- DC 2-93-096 Local Leak Rate Exceeds IST Limit

The inspectors concluded that, in general, the DC package documentation supported the licensee's evaluation of operability and reportability with an adequate description of the condition. In one case where it was needed, additional information was readily available in the plant records. In the DC packages reviewed the inspectors noted several instances which demonstrated engineering support for operations and maintenance in day-to-day plant operation. In one case a containment isolation check valve failed the IST leakage limit. Engineering noted that this check valve (2-1411-U4-031) had a history of leaking. Consequently, a DCP was issued to relocate the check valve down-stream where it would still fulfill its function to prevent backflow, and a globe valve was installed for the containment isolation function. In another case, while making penetrations in the control room

pressure boundary for cable conduit, the device being used to control the size of the breach to 1.64 square inches inadvertently fell off. This allowed the size of the opening to be increased to 2 square inches. Engineering confirmed that the 2 square inch hole did not invalidate the ability to maintain a positive pressure $\geq 1/8$ inch water gauge in the control room relative to adjacent areas.

The inspectors were unable to determine the involvement of Engineering Support (ES), which included the system engineers, in the identification of problems. While the identifying department is recorded on each DC, no composite record of the identifying department is maintained in the data base. However, it was determined that of the 542 DCs written in 1993, 278 (51%) were assigned to ES for determination of the resolution. A review of weekly status reports for a two month period showed that engineering had only one overdue DC and no overdue Management Attention items. Also, partial review of a system engineer's system log book showed numerous references to support for MDDs.

The inspectors concluded that considerable engineering resources were devoted to supporting day-to-day plant operations and to improving plant reliability.

4. Licensee Actions on Previous Inspection Findings (92701)

- a. (CLOSED) IFI 50-424, 425/92-24-01, concerned the completion of actions identified in a letter from C. K. McCoy to W. B. Shipman (Log MSV-00575) dated May 13, 1991. Specifically, actions awaiting the NRC review of WCAP 12910 were to revise design control procedures, update the FSAR, and change the Technical Specifications as appropriate, in regard to testing pressurizer safety and main steam safety relief valves. The NRC safety evaluation report (SER) for WCAP 12910 was issued February 19, 1993. The SER concluded that the set pressure shift and response to plant over-pressure conditions described in WCAP 12910 was acceptably conservative. Based on this assessment, the inspectors reviewed the licensee's completion of the actions specified in their letter of May 13, 1991. In a letter dated May 12, 1993, Southern Company Services, which is the design organization for Vogtle, confirmed that a Design Manual Change Notice (No. 1201-6) was issued which requires reference to WCAP 12910 for any design modifications that could effect the reactor coolant system to pressurizer differential pressure. The licensee had performed the calculations as recommended by WCAP 12910 methodology and determined that there was not sufficient safety margin to change the one percent tolerance on the pressurizer safety valve setpoint. However, there was adequate margin to change the main steam safety relief valve setpoint tolerance. The calculations show that a -2 percent to +3 percent range was acceptable. A submittal to the NRC requesting a Technical Specification change was being prepared. An FSAR update had been

drafted but cannot be implemented until the Technical Specification change has been approved. Also, test procedure 28215-C, Pressurizer Code Safety Valve Setpoint Verification, has been revised to conform to WCAP 12910.

The inspectors considered that the licensee's actions were sufficiently advanced to close this followup action.

- b. (CLOSED) IFI 50-424/93-08-01, Conduct of Fire Drill Exercises in Fire Areas Where Deviations from NRC Fire Protection Requirements Were Approved.

During 1993, the licensee enhanced the fire drill program to include fire brigade drill exercises in three fire areas in Unit 1 which do not have full area suppression in conformance with Section C.5.5(2)(b) of the NRC Chemical Engineering Branch Technical Position, BTP CMEB 9.5.1. These areas were discussed in the Safety Evaluation Report (NUREG-1137), Supplement 4, dated December 1986, Appendix Q, Section 2.6. To evaluate the drill effectiveness and fire brigade performance, drill critique data for the following drill scenarios conducted in 1993 was reviewed by the inspectors:

- Fire Area 1-AF-B-D, Auxiliary Feedwater Pump House, Zone 157A, (93-Q3-A and 93-Q4-C)
- Fire Area 1-AB-LD-G, Auxiliary Building Level C, Zone 14C, (93-Q4-A and 93-Q4-E)
- Fire Area 1-AB-L2-A, Auxiliary Building Level 2, Zone 53, (93-Q4-B and 93-Q4-D)

Additionally, a fire brigade drill in Fire Area 1-AF-B-D, Auxiliary Feedwater Pump House, was observed on November 19, 1993, by the NRC Resident Inspectors. This was documented in NRC IR 50-424, 425/93-26. Based on this review, the inspectors concluded that overall brigade response times and personnel participation for these drills were considered satisfactory. This item was closed.

5. Exit Interview

The inspection scope and results were summarized on March 11, 1994, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection findings. Proprietary information is not contained in this report. No dissenting comments were received from the licensee.

6. Acronyms and Initialisms

ABN	As-Built Notification
ACI	Auto Closure Interlock
AFR	Audit Finding Report
AFW	Auxiliary Feedwater
BTP	Branch Technical Position
CFR	Code of Federal Regulations
CMEB	Chemical Engineering Branch
DC	Deficiency Card
DCP	Design Change Package
DCR	Design Change Request
ES	Engineering Support
FHA	Fire Hazards Analysis
FSAR	Final Safety Analysis Report
GMNP	General Manager Nuclear Plant
IFI	Inspector Followup Item
IR	Inspection Report
IST	Inservice Test
MDD	Minor Departure from Design
MWO	Maintenance Work Order
nSCW	Nuclear Service Cooling Water
PMMS	Plant Modification and Maintenance Support
PRB	Plant Review Board
QA	Quality Assurance
RER	Request for Engineering Review
RHR	Residual Heat Removal
SAER	Safety Audit and Engineering Review
SALP	Systematic Assessment of Licensee Performance
S/G	Steam Generator
TDAFW	Turbine Driven Auxiliary Feedwater
TM	Temporary Modification
TS	Technical Support