

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

Report Nos.: 50-424/94-13 and 50-425/94-13

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: May 23-27, 1994

Inspector: MEKensie Thomas M. Thomas

Accompanying Personnel: M. Hunt, Reactor Inspector W. Miller, Jr., Reactor Inspector

6-9-94 Date Signed

Coll 4/94 Date Signed

Approved by: C. Casto, Chief Test Programs Section

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.

Corporate and site engineering groups have provided timely and effective support to plant operations and maintenance.

The licensee's predictive/preventative maintenance program was effective in identifying and correcting potentially degraded components.

Plant procedures describing the duties and responsibilities of the various plant departments do not accurately reflect the Operations Department and the Plant Modifications and Maintenance Support (PMMS) Department. For example, the responsibilities for buildings and grounds were transferred from Operations to PMMS, but plant administrative

9406290068 940620 PDR ADOCK 05000424 G PDR procedures were not revised to reflect the change. Additionally, the PMMS department has been slow in developing administrative and implementing procedures to perform their duties and responsibilities as delineated in plant administrative procedures.

- Good interface communications were observed between site technical personnel and corporate engineering personnel during the in process review of design change packages.
- The engineering staffing levels and training were sufficient to provide adequate support to the plant.
- Management initiatives were effective in addressing the area of backlog.
- 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.
 - Modifications reviewed were technically adequate with sufficiently detailed 10 CFR 50.59 safety evaluations. Adequate post modification test requirements were specified.

1.1 Persons Contacted

Licensee Employees

- D. Adams, Planning and Scheduling Supervisor, Plant Modifications and Maintenance Support
- *J. Beasley, General Manager Nuclear Plant
- *W. Burmeister, Manager, Engineering Support
- P. Burwinkel, Engineering Supervisor, Engineering Support
- *S. Chesnut, Manager, Engineering Technical Support
- *C. Christiansen, Supervisor, Safety Audit and Engineering Review
- 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
- *P. Kochery, Plant Engineering Supervisor, Plant Modifications and Maintenance Support
- *G. McCarley, Supervisor, Independent Safety Engineering Group
- *D. McCary, Plant Engineering Supervisor, Maintenance
- *M. Sheibani, Supervisor, Nuclear Safety and Compliance
- *J. Swartzwelder, Manager, Outage and Planning
- *T. Webb, Engineer, Technical Support

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. Engineering and Technical Support Activities (37700)

> Organization and Staffing ä.

> > Engineering and technical support were provided by both onsite and corporate organizations. The inspectors reviewed the Vogtle Electric Generating Plant Organization Chart dated March 1994. In addition to reviewing the most recent organization chart, the inspectors reviewed the following procedures which established the management authority, divisional responsibilities and requirements, procedural guidance, and the gualifications of the technical staff assigned to the engineering and technical support departments at Vogtle:

Procedure No.	Title/Description
00001-C	Plant Organization Managerial Staff Responsibilities and Authority (Rev. 9)
00050-C	Procedure Development (Rev. 12)
00150-C	Deficiency Control (Rev. 16)
00400-C	Plant Design Control (Rev. 19)
00704-C	Personnel Qualification Program (Rev. 9)
00743-C	Technical Staff Training and Qualification (Rev. 6)
20016-C	Maintenance Engineering Organization (Rev. 5)
20021-C	Maintenance Engineering Personnel Qualification (Rev. 5)
50000-C	Conduct of Engineering Support (Rev. 5)
50003-C	Engineering Support Personnel Qualification (Rev. 8)
58004-C	Plant Modifications and Maintenance Support Personnel Qualification (Rev. 0)
80000-C	Technical Support Department Organization and Responsibilities (Rev. 4)
80003-C	Technical Support Department Personnel Qualifications (Rev. 3)

(1) Corporate Engineering Support

Primary engineering support was provided by Southern Company Services (SCS), the licensee's architect engineer, and Southern Nuclear Operating Company/Georgia Power Company (SNC/GPC) in Birmingham, Alabama. On May 4, 1994, the SCS Nuclear Plant Support - Vogtle Project was reorganized by realigning the management structure of this organization. The former discipline type organization, i.e. mechanical, electrical, and civil groups, were consolidated into two design/engineering groups. These were the Balance of Plant and the Nuclear Steam Supply System (NSSS) groups, under the supervision of a Team Leader reporting directly to the Vogtle Project Engineering Manager. The former Design Drafting and Support Group was replaced with a Design Configuration Group which reports to the Vogtle Project

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Engineering Manager. The size of this new organization was about the same as the former organization and the licensee indicated that adequate support should continue to be provided to the Vogtle facility.

On March 10, 1994, one of the NRC resident inspectors from Vogtle visited the SCS and SNC/GPC offices in Birmingham to review the support provided to the Vogtle facility. The inspector concluded that these organizations functioned effectively and were providing adequate support to the Vogtle site. For details on this inspectic refer to NRC Inspection Report 50-424, 425/94-05.

(2) Maintenance Engineering

The Maintenance Engineering group reported directly to the Maintenance Department Manager and provided angineering support in the areas of predictive and preventative maintenance, surveillance testing, industry codes, welding, and component failures. The responsibilities and administrative controls for this group were established by Procedure 20016-C. This group was staffed with a supervisor, six degreed engineers and eight technicians. During refueling outages, approximately 18 maintenance personnel and four contractors are assigned to this group to accomplish the NRC Generic Letter 89-10 Motor Operated Valve (MOV) testing program. The size of this staff was adequate to accomplish their assigned tasks. Some of the specific programs administered by this organization include, but were not limited to: bolting/torquing, condenser air in-leakage, containment integrity, equipment qualification program, freeze seal program, lube oil evaluation and trending, MOVs. preventive maintenance program, reactor trip breaker trending, ASME Section XI Repair and Replacement Program, snubber testing, thermography, vibration analysis, and the weld program.

The inspectors reviewed the following Maintenance Engineering programs:

Oil Analysis Program

Lubrication oil samples were periodically taken from approximately 200 equipment components. Approximately 100 samples were normally taken each month. These samples were analyzed by the licensee in an on-site laboratory to check the following: particulate count, viscosity, water content, color, odor, sludge, and magnetic content. The inspectors visited the laboratory and observed the analysis of an oil sample from Condensate Pump 1A. This sample was found to be unsatisfactory due to a high particulate count and another sample was requested. The analysis of this new sample was not observed by the inspectors. The inspectors noted that the laboratory was clean, well equipped, well staffed and effectively operated. In April 1994, a new modern water content analysis device was added to the laboratory to improve the analysis program. The inspectors considered the licensee's oil analysis program to be an effective part of the predictive/preventative maintenance program.

Vibration Analysis Program

In addition to the vibration readings taken by the Inservice Test Program for rotating equipment, additional vibration readings were taken on approximately 184 components for the licensee's predictive/preventative maintenance program. Vibration analysis was performed on approximately 75 components per month. The licensee's vibration analysis program has routinely identified required maintenance on several components which permitted corrective actions before major equipment damage occurred. For example, in May 1994, high vibrations were observed on Stator Cooling Pump Motor 2B. Subsequent investigations found that the motor mounting brackets for this motor were not parallel to the equipment base plate. This was corrected by the installation of shims between the bracket and the base plate. Also, in May 1994, high vibrations were noted on the motor for Reactor Coolant Pump 2B. Subsequent investigations found that the pump motor had not been properly balanced following maintenance during the previous refueling outage. The licensee rebalanced the motor which corrected the vibration problem. The inspectors concluded that the vibration analysis program was an effective part of the licensee's Predictive/Preventative Maintenance Program.

Valve Packing Application Program

The Maintenance Engineering group has developed a computer based valve packing program that allows the use of packing materials from multiple vendors. A valve packing data sheet has been developed that identifies the vendor part number, plant stock number, quantities required, packing nut torque, stem friction, and a graphic of the packing configuration. This program has resulted in a reduction of approximately 80 percent of the replacement packing inventory previously maintained in storage, reduced valve packing leaks, simplified and standardized packing configuration and improved the performance of air operated valves. This is an example of an outstanding initiative by the licensee's staff. (3) Engineering Technical Support

The Engineering Technical Support Department reports directly to the Assistant General Manager-Plant Support. Procedure 80000-C described the duties and responsibilities cf this department which was divided into the following four sections: Reactor Engineering, staffed with three degreed engineers; Licensing and Compliance, staffed with three degreed engineers and six nuclear specialists: Performance. staffed with seven degreed engineers; and Quality Control, staffed with 12 QC specialists. Each of these sections had a supervisor, except the QC group which had two supervisors. The principle duties of the Reactor Engineering Section were monitoring reactor core physics and fuel reliability. The Licensing and Compliance Section provided the on-site interface with NRC and other regulatory agencies. The duties of the Performance Section included monitoring overall plant performance, specific component performance. and implementation of the Inservice Inspection Program. The duties of the Quality Control Section included monitoring and inspecting the quality of work performed in the plant during maintenance activities to assure quality.

(4) Plant Modifications and Maintenance Support

The Plant Modification and Maintenance Support (PMMS) Department reports directly to the Assistant General Manager-Plant Support. Procedures to define the duties. responsibilities and administrative controls of the PMMS Department had not been developed. This department was divided into the following three sections: Plant Engineering, staffed with four degreed engineers and four nuclear specialists; Planning and Scheduling, staffed with five nuclear specialists; and Maintenance Support, which was basically a non-technical group consisting of approximately 55 employees involved with the work activities associated with buildings and grounds. Each of the other two sections was staffed with a supervisor. These sections were primarily involved with the oversight and implementation of the major modification packages generated by the off site engineering organizations. There was no appreciable backlog of work within the PMMS and this department was adequately staffed to accomplish its goals.

Procedure 58004-C was issued to establish the qualifications and requirements of the personnel assigned to be PMMS department. Otherwise, the licensee had elected not to prepare and issue any additional procedures at this time.

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Procedure 00001-C, Section 3.1.k, indicated that the general responsibility of department managers and superintendents included preparing, approving, maintaining and implementing the assigned plant procedures referenced by Procedure 00050-C. Procedure 00050-C, Section 2.9, required administrative and implementing procedures for the PMMS Section. However, a note in Section 2.9 states "Engineering Support Department and Maintenance Department procedures may be used by the Plant Modifications and Maintenance Support Department until appropriate procedures are developed."

The inspectors noted that recent plant management and organizational changes added additional duties and responsibilities to the PMMS Section, such as buildings and grounds, which are not addressed by other plant procedures. Also, all other departments reviewed during this inspection had procedures which identified the duties and responsibilities of the department. The licensee indicated that the inspectors' concerns regarding the development of procedures for the PMMS Department would be evaluated.

The PMMS Department coordinated the technical reviews of design change packages (DCPs) generated for the Vogtle site. Several reviews are performed during the design process, i.e. at the 10%, 50% and 90% design stage. The inspectors attended the 10 percent design review meetings for the following DCPs:

DCP 91-V1N0226-0-1	Unit 1 Reactor Cavity Filtration System Removal
DCP 91-V2N0227-0-1	Unit 2 Reactor Cavity Filtration System Removal
DCP 94-V1N0004-0-1	Installation of Dynamic Absorbers for Unit 1 Nuclear Service Water System Pumps to Reduce Pump Motor

Vibrations

These meetings were attended by representatives from the site Maintenance Department, Engineering Support Department, Plant Modifications and Maintenance Department, and Health Physics and Chemistry Department and by conference call with representatives from SCS and SNC/GPC in Birmingham. The inspectors observed a good exchange of information between SCS design engineering and site representatives which should result in the final DCPs meeting both the design objectives and the site requirements. Based on this review, the inspectors considered the design review meetings to be an effective portion of the DCP implementation process.

(5) Engineering Support

The Engineering Support Department provided engineering and technical direction and support to other departments regarding the safe, efficient and reliable operations for the plant systems assigned to the department and ensures proper controls over modifications to plant systems and structures. The responsibilities and administrative controls of this department were established by Procedure 50000-C.

The system engineers were assigned to this department. These engineers were responsible for evaluating the performance of their assigned systems and to initiate appropriate actions to enhance the availability, efficiency and safety of these systems. The Engineering Support Department was divided into five groups as follows: primary (NSSS) systems, staffed with four degreed engineers and one nuclear specialist; balance of plant systems, staffed with five degreed engineers; HVAC and fire protection systems, staffed with five degreed engineers; chemistry, radwaste and I&C systems, staffed with six degreed engineers; and electrical and security systems, staffed with five engineers and one nuclear specialist. Each group was under the supervision of a plant engineering supervisor. All plant systems and components were assigned to one of the system engineers who, through education and specialized training, were knowledgeable of the operational characteristics of their assigned systems and components. The licensee indicated that the assignment of systems and components was made to prevent any engineer from being overloaded. This was substantiated by the lack of an appreciable backlog of work within this department.

The inspectors held discussions with several system engineers and reviewed documentation of selected plant activities to evaluate the engineering involvement and support of day-to-day plant operations. This support included preparing temporary modifications (TM) and minor modifications, which are also known as minor departures from design (MDD); DCP implementation; responding to deficiency cards; performing safety evaluations; etc. The licensee's temporary modification process was reviewed and discussed in NRC Inspection Report 50-424, 425/94-07. The MDD process and selected completed MDDs were reviewed and are discussed in paragraph 3 of this inspection report.

(6) Training and Qualifications

The qualification requirements for the technical staff were established by procedure 00743-C and by the specific qualification procedure for each department as identified above. The inspectors reviewed each of these procedures for compliance with governing procedure 00743-C. Procedure 58004-C, Plant Modifications and Maintenance Support Personnel Qualification, did not require that the technical employees for the PMMS Department receive training in secondary plant systems (EN-150). The licensee promptly initiated actions to revise this procedure. Procedure 50003-C, Engineering Support Personnel Qualification, used out of date training course numbers for the required technical training courses. The licensee indicated that Procedure 50003-C is scheduled to be revised to correct this discrepancy prior to August 1, 1994.

The training records for a sample (14 out of approximately 140) of the engineers and specialists from the site engineering and technical departments were reviewed by the inspectors to verify that these employees met the established requirements. Of the records reviewed, all of these technical employees either met the current training requirements or had attended equivalent training which had been certified by the site training organization.

The training program for the engineering and technical staff was initially accredited by the Institute of Nuclear Power Operations in September 1992.

Based on this review, the inspectors concluded that the staffing levels and the training and qualifications of the technical staff within the various departments were adequate to effectively accomplish the required engineering support for the plant.

b. Engineering Backlogs

The inspectors reviewed the status of engineering backlogs to determine if sufficient engineering resources and management attention had 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 data of MWO, and DCR/DCP backlogs
- Procedure 50007-C, Engineering Review of Design Change Packages (Rev. 7)
- Procedure 50008-C, DCP Implementation and Closure (Rev. 6)

listing of DCRs/DCPs implemented/Closed for the Period of January 1, 1993 to May 1, 1994

MWO Selection Report-Gpen Work Orders Awaiting Engineering dated May 23, 1994

The inspectors found that the trend data for 1993 showed a reduction in the overall engineering backlogs. From December 1992 to December 1993, 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.

There were a total of 27 open work orders awaiting engineering actions for resolution. Of these open work requests, one was issued in 1992, four were issued in 1993, and 22 were issued in 1994. The item opened in 1992, required troubleshooting, correction of wiring defects and replacement of several defective components such as electrical computer chips, capacitors, etc., in the Post Accident Sampling System. The system engineer was evaluating the problems identified on this system and the corrective maintenance performed to determine the appropriate actions required to resolve this problem. This evaluation was scheduled to be completed by June 3, 1994.

The inspectors concluded that adequate engineering resources and management attention was being focused to control the engineering backlog.

c. Problem Identification and Resolution

The process used by the licensee to identify and track routine plant problems was the Deficiency Card (DC) system. Procedure No. 00150-C, Deficiency Control, prescribed the responsibilities for identifying, evaluating, reporting, and dispositioning deficiencies. The time limitations and distribution path was defined in the procedure. The process for identifying, classifying, and determining reportability and operability was delineated in Procedure No. 00150-C. The licensee's DC process was examined in detail (see NRC Inspection Report No. 50-424, 425/94-07) to verify that the process was functioning as described in the referenced documents.

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-today plant operations. In addition, the inspectors also reviewed various aspects of the following DC packages for timeliness, adequate review before closure, and engineering involvement.

DC 1-93-0012 Train B ESF Chiller Failed to Start

DC 1-93-0039 Wire Insulation Damage

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D)C	1-93-0072	Wrong Oil Added to EDG 1B
D)C	1-93-0247	Inadequate Verification of Post Testing Conditions after ESFAS Tests (IN 93-38)
D)C ;	2-93-0118	QC Hold Points Were Bypassed in Procedure 25009-C
D	C :	2-93-0189	NSCW Tower Fan #2 Did Not Load Shed During Tests
D)C (2-93-0124	Valves 2-1302X4191 & 192 Were Removed from Their Location Without MWO Work Instructions

The inspectors concluded that 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 that engineering evaluations had been performed and documented which demonstrated engineering support for operations and maintenance in day-to-day plant operation.

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

Violations or deviations were not identified in the areas inspected.

3. Design Changes and Plant Modifications (37700)

The inspectors reviewed the DCPs and MDDs listed below to: (1) determine the adequacy of the safety evaluation screenings and the 10 CFR 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 also 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 (Rev 14)
00400-C	Plant Design Control (Rev 19)
50006-C	Preparation of Design Change Requests (Rev 9)

50007-C Engineering Review of Design Change Packages (Rev 7)

50008-C DCP Implementation and Closure (Rev 6)

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	91-V1N138	Install Moving Contact Support Kits to All Westinghouse Protective Relays Manufactured Between 1981 & 1983
DCP	92-V1N0144	Sola Transformer Disconnection to Increase the Load on the Remaining Transformers to Provide Better Voltage Regulation
DCP	92-V1N0171	Modify Sequencer 1A & 1B Circuit Boards So That the Test Lights for SI and ${\rm U}/{\rm V}$ Operate Properly
DCP	92-V2N0160	Replacement of AFW Check Valves
MDD	89-V2M122	Change Unit 2 Condensate Storage Tank Degasifier Pump Discharge Pressure Gauges
MDD	91-V1M039	Main Feedwater Pump Speed Control Reliability Improvements
MDD	91-V2M017	Auxiliary Feedwater Pump Rated Speed Increase
MDD	91-V2M078	Install Baffle Plate for Auxiliary Building Supply Duct
MDD	92-V2M007	Install Main Turbine Lockout Valve Manual Actuation Handswitch
MDD	93-V1M014	Post Accident Sampling System Check Valve Addition

The inspectors reviewed affected FSAR drawings, FSAR tables and figures, operator training, and changes to the operations procedures, to determine if the applicable documents and training materials had been updated to accurately reflect the modifications. In each DCP reviewed, it was noted that a walkdown and review of the implementing MWOs was performed to insure the work was satisfactory and complete. Reviews of the affected changed procedures were performed and the post modification testing was reviewed before the modified system was returned to service. 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.

Violations or deviations were not identified in the areas inspected.

5. Exit Interview

The inspection scope and results were summarized on May 27, 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
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
DC	Deficiency Card
DCP	Design Change Package
DCR	Design Change Request
EDG	Emergency Diesel Generator
ESF	Engineered Safety Features
ESFAS	Engineered Safety Features Actuation System
FSAR	Final Safety Analysis Report
GPC	Georgia Power Company
HVAC	Heating Ventilation and Air Conditioning
IFI	Inspector Followup Item
MDD	Minor Departure from Design
MOV	Motor Operated Valve
MWO	Maintenance Work Order
NSCW	Nuclear Service Cooling Water
NSSS	Nuclear Steam Supply System
PMMS	Plant Modification and Maintenance Support
QC	Quality Control
SCS	Southern Company Services
S1	Safety Injection
SNC	Southern Nuclear Operating Company
TM	Temporary Modification
U/V	Undervoltage