



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

Report No.: 50-424/87-31

Licensee: Georgia Power Company  
 P.O. Box 4545  
 Atlanta, GA 30302

Docket No.: 50-424

License No.: NPF-68

Facility Name: Vogtle 1

Inspection Conducted: April 18 - May 22, 1987

Inspectors: E. F. Chant 6/24/87  
 FOR J. F. Rogge, Senior Resident Inspector, Date Signed  
 Operations

E. F. Chant 6/24/87  
 FOR R. J. Schepens, Resident Inspector, Operations Date Signed

Accompanying Personnel: C. W. Burger  
 P. Holmes-Ray

Approved by: M. V. Sinkule 6/24/87  
 M. V. Sinkule, Section Chief Date Signed  
 Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection entailed Resident Inspection in the following areas: Plant Operations, Radiological Controls, Maintenance, Surveillance, Fire Protection, Emergency Preparedness, Security, Startup Test Program, Quality Programs and Administrative Controls Affecting Quality, and Follow-up On Previous Inspection Identified Items.

Results: Two violations were identified Failure to Prescribe Appropriate Procedures for Performing Maintenance (MSIV 1HV-3006B) and Failure to Declare Both RHR Trains Inoperable and Comply with Technical Specification 3.5.2.

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## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

P. D. Rice, Vice-President, Vogtle Project Direction  
R. H. Pinson, Vice-President, Project Construction  
C. W. Whitney, General Manager, Project Support  
G. Bockhold, Jr., General Manager Nuclear Operations  
E. M. Dannemiller, Technical Assistant to General Manager  
\*T. V. Greene, Plant Manager  
\*R. M. Bellamy, Plant Support Manager  
\*P. R. Bemis, Manager of Engineering  
C. W. Hayes, Vogtle Quality Assurance Manager  
\*C. E. Belflower, Quality Assurance Site Manager - Operations  
\*W. E. Mundy, Quality Assurance Audit Supervisor  
\*W. C. Gabbard, Regulatory Specialist  
C. F. Meyer, Operations Superintendent  
\*R. M. Odom, Plant Engineering Supervisor  
\*M. A. Griffis, Maintenance Superintendent  
\*G. R. Frederick, Quality Assurance Engineer/Support Supervisor  
\*R. E. Spinnato, ISEG Supervisor  
J. F. D'Amico, Nuclear Safety & Compliance Manager  
\*W. F. Kitchens, Manager Operations  
V. J. Agro, Superintendent Administration  
A. L. Mosbaugh, Assistant Plant Support Manager  
M. P. Craven, Nuclear Security Manager  
J. E. Swartzwelder, Deputy Manager - Operations  
\*P. H. Burwinkel, Engineering Supervisor - HVAC

Other licensee employees contacted included technicians, supervisors, engineers, operators, mechanics, inspectors, and office personnel.

\*Attended Exit Interview

### 2. Exit Interviews - Unit 1 (30703)

The inspection scope and findings were summarized on May 22, 1987 with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection results. 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 inspector during this inspection. Region based NRC exit interviews were attended during the inspection period by a resident inspector. This inspection closed two unresolved items. The items identified during this inspection are:

- a. Violation 50-424/87-31-01 "Failure to Prescribe Appropriate Procedures for Performing Maintenance on safety Related Equipment (MS<sup>1</sup> JHV 006B)" - Paragraph 5.b.(7).

- b. Violation 50-424/87-31-02 "Failure to Declare Both RHR Trains Inoperable and Comply with Technical Specification 3.5.2" - Paragraph 7.
  - c. Unresolved Item 50-424/87-31-03 "Complete Review of Crud Tank Overpressurization" - Paragraph 4.
  - d. Inspector Followup Item 50-424/87-31-04 "Review Methodology for Control of Throttle Valves" - Paragraph 5.b.(1).
3. Licensee Action on Previous Enforcement Matters - Unit 1 (92702)

Not inspected.

4. Unresolved Items - Unit 1 (92701)

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. One unresolved item identified during this inspection is discussed in Paragraph 5.b.(4).

5. Operational Safety Verification - Unit 1 (71707) (93702)

The plant began this inspection period in power operation (Mode 1) conducting startup testing at the 50% power plateau. On April 23, the unit achieved 75% power plateau but was forced to reduce power to perform repairs on the B main feed pump and EHC hydraulic leaks. On April 29, the reactor tripped from 74% power on OT-delta-T and returned to Mode 1 on April 30. The unit remained at the 75% plateau until May 4, when the reactor again tripped on OT-delta-T. Following this trip a faulty card was identified as the cause for both trips. On May 6, the unit returned to Mode 1 and performed further testing until the reactor tripped on May 9. This trip was due to low steam generator water level following the 10% load upswing test from 65% power in which the power overshoot to 80% with insufficient feed capability due to one feed pump out of service. On May 10, the unit returned to Mode 1 and completed the 75% power plateau testing on May 12. On May 13, the reactor tripped from 90% power when improper maintenance on one main steam isolation valve resulted in valve closure.

Plant management elected to proceed to cold shutdown (Mode 5) and conduct a main turbine bearing inspection. On May 19 the unit proceeded from Mode 5 to hot standby Mode 3 in preparation for reactor restart when plant management placed a startup hold while the site responded to contamination of the demineralized water header problem. The unit was in Mode 3 at the end of this inspection period. During the inspection a total of ten (10) ESFAS actuations occurred as follows: Five (5) control room ventilation isolations from three (3) radiation monitor problems and two (2) chlorine detector problems; one (1) containment ventilation isolation resulting from breaker switching; two (2) main feedwater isolations due to Hi-Hi steam generator levels; two (2) auxiliary feedwater actuations resulting from low suction pressure trip of the main feedwater pumps.

a. Control Room Activities

Control Room tours and observations were performed to verify that facility operations were being safely conducted within regulatory requirements. These inspections consisted of one or more of the following attributes as appropriate at the time of the inspection.

- Proper Control Room staffing
- Control Room access and operator behavior
- Adherence to approved procedures for activities in progress
- Adherence to Technical Specification (TS) Limiting Conditions for Operations (LCO)
- Observance of instruments and recorder traces of safety related and important to safety systems for abnormalities
- Review of annunciators alarmed and action in progress to correct
- Walkdown of main control board; electrical auxiliary control board; heating, ventilation, and air-conditioning systems panel; and miscellaneous systems and equipment panel
- Safety parameter display and the plant safety monitoring system operability status
- Discussions and interviews with the On-Shift Operations Supervisor, Shift Supervisor, Reactor Operators, and the Shift Technical Advisor to determine the plant status, plans and assess operator knowledge
- Review of the operator logs, unit log and shift turnover sheets

Additional inspections conducted consisted of an in-depth review of the following clearances:

- 1-87-1337        RWST Sludge Mixing Pump
- 1-87-1341        Steam Generator Main Feed Pump "B"

No violations or deviations were identified.

b. Facility Activities

Facility tours and observations were performed to assess the effectiveness of the administrative controls established by direct observation of plant activities, interviews and discussions with licensee personnel, independent verification of safety systems status and LCO's, licensee meetings and facility records. During these inspections the following objectives are achieved:

- (1) Safety System Status (71710) - Confirmation of system operability was obtained by verification that flowpath valve alignment, control and power supply alignments, component conditions, and support systems for the accessible portions of the ESF trains were proper. The inaccessible portions are confirmed as availability permits. Additional indepth inspection of the containment isolation system and the essential

chilled water system was performed to review the system lineup procedure with the plant drawings and as-built configurations, compare valve remote and local indications, walkdowns were expanded to include hangers and supports, and electrical equipment interiors. The inspector verified that the lineup was in accordance with license requirements for system operability.

The inspector utilized FSAR Table C.2.4.1 and the following piping and instrumentation drawings to conduct the walkdown of the containment isolation system.

<u>DWG NO.</u>	<u>TITLE</u>
1X4DB110	Post Accident Sampling System
1X4DB112	Reactor Coolant System
1X4DB114	Chemical & Volume Control System
1X4DB120	Safety Injection System
1X4DB121	Safety Injection System
1X4DB127	Waste Processing System - Liquid
1X4DB140	Nuclear Sampling System - Liquid
1X4DB143	Containment & Auxiliary Building Drains - Radioactive
1X4DB174-4	Fire Protection Water System
1X4DB186-1	Service Air System
1X4DB186-4	Instrument Air System

This inspection also encompassed a walkdown of Surveillance Procedure 14475-1 "Containment Integrity Verification - Valves Outside Containment" as well as a technical review to verify it satisfied Technical Specification 4.6.1.1a surveillance requirements.

The inspector utilized the following piping and instrumentation drawings to conduct the walkdown of containment integrity.

<u>DWG NO.</u>	<u>TITLE</u>
1X4DB120	Safety Injection System
1X4DB121	Safety Injection System
1X4DB130	Spent Fuel Cooling & Purification System
1X4DB131	Containment Spray System
1X4DB132	Miscellaneous Leak Detection
1X4DB159-1	Main Steam System
1X4DB159-3	Main Steam System
1X4DB186-1	Service Air System
AX4DB190-2	Plant Demineralized Water System
1X4DB213-1	Purification and Clean-up System

The inspection of the essential chilled water system consisted of a walkdown of Train "A" to verify proper alignment for standby readiness per Operations Procedures 13744-1 "Essential Chilled Water System" and 11744-1 "Essential Chilled Water System Alignment for Startup and Normal Operation" and Piping and Instrumentation Drawing Nos. 1X4DB221 and 1X4DB233. Per Procedure 11744-1 the required position for cooling coil outlet valves from the ESF coolers is throttled. These valves are throttled to flow balance the system. The inspector noted that there is no requirement that these valves be locked in position once set nor is their throttled position specified (i.e. number of turns opened). Discussions with Engineering personnel revealed that the system is being flow balanced frequently due to these valves being closed by operations to support maintenance on the ESF coolers. Pending review of the licensee's program for controlling throttle valves to address the above noted comments this item will be identified as IFI 50-424/87-31-04 "Review Methodology for Control of Throttle Valves".

- (2) Plant Housekeeping Conditions - Storage of material and components and cleanliness conditions of various areas throughout the facility were observed to determine whether safety and/or fire hazards existed.
- (3) Fire Protection - Fire protection activities, staffing and equipment were observed to verify that fire brigade staffing was appropriate and that fire alarms, extinguishing equipment, actuating controls, fire fighting equipment, emergency equipment, and fire barriers were operable.
- (4) Radiation Protection (71709) - Radiation protection activities, staffing and equipment were observed to verify proper program implementation. The inspection included review of the plant program effectiveness. Radiation work permits and personnel compliance were reviewed during the daily plant tours. Radiation Control Areas (RCAs) were observed to verify proper identification and implementation. On May 19, 1987 the licensee identified that the Crud Tank had pressurized and resulted in the contamination of the demineralized water header and other back flushable filter systems. At the conclusion of this inspection period, complete assessment of the root cause had not been completed. Until this review can be completed by both the licensee and NRC it is identified as Unresolved Item 50-424/87-31-03 "Complete Review of Crud Tank Overpressurization".
- (5) Security (71881) - Security controls were observed to verify that security barriers were intact, guard forces were on duty, and access to the Protected Area (PA) was controlled in accordance with the facility security plan. Personnel within the PA were observed to verify proper display of badges and that

personnel requiring escort were properly escorted. Personnel within vital areas were observed to ensure proper authorization for the area. Equipment operability of proper compensatory activities were verified on a periodic basis.

- (6) Surveillance (61726)(61700) - Surveillance tests were observed to verify that approved procedures were being used; qualified personnel were conducting the tests; tests were adequate to verify equipment operability; calibrated equipment was utilized; and TS requirements were followed. The inspectors observed portions of the following surveillances and reviewed completed data against acceptance criteria:

<u>SURV. NO.</u>	<u>TITLE</u>
14000	Mode 1 and 2 Daily Surveillances
14980-101	Diesel Generator 1A Operability Test
14220-101	Main Turbine Valves Weekly Stroke Test
14850-101	Cold Shutdown Valve Inservice Test
24551-101	Containment Hydrogen Monitor Train "A" Analog Channel Operational Test and Channel Calibration

During an NRC walkdown of the control room miscellaneous systems and equipment panel on April 20, 1987, the inspector questioned the valve alignment of the Train "A" hydrogen monitor. The isolation valves which are normally closed were found to be in the open position. The licensee determined that Surveillance Procedure 24551-1 "Containment Hydrogen Monitor Train "A" Analog Channel Operational Test and Channel Calibration" had been performed during the day. This procedure required the opening of the Train "A" hydrogen monitor inlet (1HV-2792A and 1HV2791B) and outlet (1HV-2793B) isolation valves; however, it lacked a requirement to close the valves when restoring the system. The licensee is revising Surveillance Procedure 24551 to require closing the subject valves in the system restoration section.

The hydrogen monitoring system is a closed system designed to operate following an accident. The normal alignment for these valves following an accident is open. Therefore, the fact that these valves were not found to be in the closed position is of no safety significance. However, the fact that the operators did not question the position of these valves when the surveillance procedure work was reported to be complete for the day is an indicator of inattention to detail. This matter was discussed in the enforcement conference held with the licensee on May 20, 1987 in Region II.

- (7) Maintenance Activities (62703) - The inspector observed maintenance activities to verify that correct equipment clearances were in effect; work requests and fire prevention work permits, as required, were issued and being followed; quality control personnel were available for inspection activities as required; retesting and return of systems to service was prompt and correct; TS requirements were being followed. Maintenance backlog was reviewed. Major maintenance activities observed by the inspector were on the steam generator main feed pump "B" and the main turbine bearing inspection.

The inspector conducted an inspection of the maintenance being performed on Main Steam Isolation Valve (MSIV) 1HV-3006B as part of a followup inspection to the reactor trip which occurred on May 13, 1987 as a result of MSIV 1HV-3006B closing. The inspector reviewed the following documents pertaining to the event:

<u>DOCUMENT TYPE/NO.</u>	<u>TITLE</u>
MWO #1-87-06119	Investigate Hydraulic Leak on MSIV 1HV-3006B
Clearance #1-87-1378	1HV-3006B MSIV B for SG #1
Deficiency Card #1-87-1281	Reactor Trip on Lo-Lo SG #1 Level Due to MSIV 1HV-3006B Closure
LCO #1-87-507	MSIV 1HV-3006B Blocked Open
Adm. Proc. 00350-C	Maintenance Program
Adm. Proc. 00054-C	Rules for Performing Procedures

Maintenance Work Order 1-87-06119 was generated on May 11, 1987 identifying a hydraulic leak (possibly a solenoid valve leaking by). Subsequently, on May 12, 1987, the MSIV Loop 1 trouble alarm came in. The shift declared MWOs 1-87-06119 and 1-87-06120 as emergency in accordance with Administrative Procedure 00350-C and entered a 3-day LCO on MSIV 1HV-3006B per TS 3.7.1.5. The OSOS met with the maintenance crew to discuss the work to be conducted on the MSIV (i.e. block the valve open and replace the leaking pumpside solenoid valve). Subsequently, maintenance proceeded with physically blocking open the valve with a pipe and mechanically removing the pumpside solenoid valve. At this point, operations hung clearance 1-87-1378 to de-energize power to MSIV 1HV-3006B which actuated the MSIV to close.

During the inspector's review of the above event which included discussions with appropriate maintenance and operations personnel, the following discrepancies were noted: 1) The maintenance work being performed was not a true emergency as defined in Administrative Procedure 00054-C "Rules for Performing Procedures" Section 4.3 and Administrative Procedure 00350-C "Maintenance Programs Section 2.6, 2) Maintenance personnel were performing work on safety-related equipment without written work instructions while the MWOs were still in work planning and had not been issued to the field for work, 3) Clearance 1-87-1378 was inadequate in that it only addressed the electrical and not the mechanical side for isolating the MSIV in the open position. The Train A & B normally locked open manual manifold isolation valves should have been on the clearance to be closed prior to de-energizing the power to the MSIV solenoid valves, and 4) Verbal instructions given by operations to the maintenance crew was unclear in that the maintenance crew interpreted block open the valve to mean physically blocking it open with a pipe, not closing the Train A & B normally locked open manual manifold isolation valves.

The foregoing is considered to be in violation of Technical Specification 6.7.1a and will be identified as "Failure to Prescribe Appropriate Procedures for Performing Maintenance on Safety Related Equipment (MSIV 1HV-3006B)".

(8) Emergency Preparation

The Hatch Senior Resident Inspector familiarized himself with the site for emergency purposes, obtained a badge for unescorted access, toured the emergency response facilities and major plant areas. The inspector reviewed the licensee's emergency plan and the emergency plan implementing procedures. The review was limited to a brief familiarization with the documents. This familiarization was conducted with the Senior Resident Inspector.

No violations or deviations were identified except as identified in paragraph (7) above.

6. Followup on Previous Inspection Items - Unit 1 (92701)

(Closed) Unresolved Item 50-424/86-136-01 "Review Inspection Results of the Licensee's Review of the Containment Combined Leak Rate Surveillance Calculation for All Penetrations & Valves Subject to Type B and C Tests." The completed Deficiency Report (No. 1-87-331) was reviewed for root cause determination and corrective action to prevent recurrence. The licensee's corrective action consisted of but was not limited to the following: 1.) A review to verify that all Type B and C penetrations per FSAR Table 6.2.4-1 were included in Surveillance Procedure 28916-1 "Containment Type A, B, & C Leakage Totalization"; 2.) An update to NRC Report on Reactor

Containment Building Integrated Leakage Rate Test to reflect the current leakage rates for all required penetrations including the encapsulation vessels per Surveillance 28916-101; and 3.) A re-summation of total leakage in Preoperational Test Procedure 1-300-04 "Containment Local Leak Rate Testing" which included the encapsulation vessels (Penetrations 36-39) to verify total leakage within acceptance criteria.

Based on the above the inspector has concluded the omission of the encapsulation vessels from the total leakage calculation was an isolated case with no safety significance since the re-summed total leakage including the encapsulation vessels was found to be within the acceptance criteria; therefore, no violation has occurred and this item is considered to be closed.

(Closed) Unresolved Item 50-424/87-27-03 "Reportability of CRVI Actuations As a Result of the Chlorine Gas Monitors". This item was discussed during an NRC Staff Meeting with the licensee at Vogtle on April 28, 1987. The licensee agreed to abide by the staff's position to report CRVI actuations as a result of the chlorine gas monitors. The inspector also has reviewed corporate reportability guidance to the site to verify that it included CRVI actuations as a result of toxic gas as reportable. The licensee is submitting Licensee Event Reports as appropriate to document all CRVI actuations as a result of the toxic gas monitors. Based on the above, the inspector has concluded that no violation has occurred; therefore, this item is considered to be closed.

7. Review of Licensee Event Reports - Unit 1 (90712)(92700)

Licensee Event Reports (LERS) and Deficiency Cards (DCs) were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events which were reported immediately, were reviewed as they occurred to determine if the Technical Specifications were satisfied.

Deficiency Card (DC) 1-87-1192 was generated on April 28, 1987, at 1:45 p.m. This DC identified that the Train A & B RHR Heat Exchanger Discharge Valves (1HV-0606 & 1HV-0607) were noted by local observation to be only 90-95% of full open. This position was determined from the positioner card and the fact that the valves had a slight loading pressure on the diagram even though the remote hand controllers HIC 0606A and HIC 0607A on the Main control room board had full demand. The OSOS evaluation for LCO applicability was signed off as not applicable.

During the inspector's review on April 29, 1987, at 1:00 p.m. the inspector questioned the status of the subject valves and RHR system operability. The inspector determined that the valves were still in the above noted condition and that MWOs 1-87-05802 & 1-87-05803 had been written to perform a calibration check of the subject loop such that M/A station output corresponds with valve position. Also Operations had not declared RHR inoperable based on the following: 1) The remote hand

controllers HIC 0606A and HIC 0607A indicated full demand, 2) The Group 1 status monitor lights which illuminates when the valve is at least 95% closed was not illuminated, and 3) the latest completed ECCS Check Valve Cold Shutdown Inservice Surveillance Test Procedure 14896-1 indicated acceptable RHR injection line flow rates. The inspector questioned operations decision of the RHR system being operable based on the following concerns: 1) With the subject valves identified as being partially closed Technical Specification Surveillance Requirement Section 4.5.2b(2) which states, "Verify that each valve (manual, power operated, or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in its correct position", had not been demonstrated, and 2) With the valves in the 90-95% open position would the RHR System be capable of delivering 3788 gpm with a single pump running in the cold injection mode from the RWST per Technical Specification Surveillance Requirement Section 4.5.2h(3).

During the performance of MWOs 1-87-05802 and 1-87-05803 the following was determined: Train A RHR Heat Exchanger Valve (1HV-0606) was found to have a cable identification tag restricting the movement of the bellows assembly in the valve controller I-P. After repositioning the cable identification tag the valve was returned to the full open position. Train B RHR Heat Exchanger Valve (1HV-0607) was found to have a positioner out of calibration. This affected the valve opening stroke and prevented the valve from opening to the full open position. The controller was recalibrated which returned the valve to the full open position. These repairs were completed on April 29, 1987, at 10:00 p.m. and the valves were returned to the full open position.

Subsequently, Engineering conducted a review to determine if the TS minimum flow requirement was satisfied. Utilizing the RHR System Preoperational Test Data Engineering generated a valve position versus indicated flow curves. These curves in conjunction with the most conservative value for the as-found valve position of 90% open were used to determine the as-found pump flow. Using these curves Engineering determined the Train A flow rate to be 3762 gpm (.7% below TS limit) and Train B flow rate to be 3686 (2.7% below TS limit).

The inspector reviewed the RHR System Preoperational Test Data contained on Data Sheets 7.5 & 7.6 in Preop 1-3BC-01. The flows recorded in the preop were 4158 gpm for Train A and 4064 for Train B. The latest completed Surveillance Procedure 14896-1 was reviewed which indicated Train A to have an actual flow rate of 3875 on February 3, 1987, and Train B to have an actual flow rate of 4050 gpm on January 9, 1987. Also, a review was conducted of all MWO's performed on the subject valves to try to determine how long this condition could have existed. Based on the inspector's review it was not possible to determine if the condition existed during the latest completed surveillance; however, it was concluded that between the preop which was completed on February 24, 1986, for Train A and February 23, 1986 for Train B there was a change in flow rate due to these valves being partially closed.

In conclusion, based on the licensee's engineering evaluation using the conservative figure of the valve only being open 90%, the calculated flows delivered by each RHR preop would have been marginally below the TS minimum of 3788 gpm.

The foregoing is considered to be in violation of Technical Specification 6.7.1.a and will be identified as Violation 50-424/87-31-02 "Failure to Declare Both RHR Trains Inoperable and Comply with Technical Specification 3.5.2" and is being evaluated for possible escalated enforcement action.

8. Management Meetings - Unit 1 (30702)

The Resident Inspectors attended a meeting at Vogtle with the NRC Staff and the licensee on April 28, 1987, to discuss Vogtle's startup history. Mr. A. F. Gibson, Director-Division of Reactor Projects and Mr. V. L. Brownlee, Acting Deputy Director - Division of Reactor Projects were in attendance from the Regional Office.

On May 11, 1987, the Resident Inspectors attended a presentation on Vogtle Electric Generating Plant given by the licensee to Commissioner Mr. F. M. Bernthal and his Technical Assistant Mr. J. F. Meyer. Mr. M. L. Ernst, Deputy Administrator and Mr. V. L. Brownlee, Acting Deputy Director - Division of Reactor projects were in attendance from the Regional Office.

On May 20, 1987, the Resident Inspectors attended an NRC Enforcement Conference held with the licensee in Region II. The subject was proper System/Component alignments and attention to detail. The licensee's presentation discussed six (6) component alignment events and a summary of both short and long term corrective actions. While it was noted that the licensee could not identify the root cause in some of the component alignment events, the licensee hoped that the establishment of additional measures for valve manipulations would be helpful in identifying the root cause for future cases should one occur.