



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

Report Nos.: 50-424/89-11 and 50-425/89-13

Licensee: Georgia Power Company  
 P. O. Box 1295  
 Birmingham, AL 35201

Docket Nos.: 50-424 and 50-425

License Nos.: NPF-68 and NPF-79

Facility Name: Vogtle 1 and 2

Inspection Conducted: March 7 - 10 and 29 - 31, 1989

Inspector: *P. T. Burnett* 10 April 1989  
 P. T. Burnett Date Signed

Approved by: *G. A. Belisle* 4/10/89  
 G. A. Belisle, Chief Date Signed  
 Test Programs Section  
 Engineering Branch  
 Division of Reactor Safety

SUMMARY

Scope

This routine, unannounced inspection addressed the areas of proposed startup tests for Unit 2 and followup of a previous violation on Unit 1.

Results

The proposed startup test to demonstrate remote shutdown capability used more personnel than the licensee had represented as required for the task and exceeded the minimum shift crew size as specified in technical specifications and described in the Final Safety Analysis Report. Following extensive discussions with the licensee and Region II management, a determination was made that the test must be conducted with a minimum crew of four, of whom only one could be a senior reactor operator. The licensee issued revision 1 to the procedure to conduct the test with a crew of four. (Paragraph 2)

Documentation of computer software changes has been significantly improved. However, a recent software addition to the ERF computer did not reflect the most recent version of the surveillance procedure it was supposed to emulate. The solution to this user-programmer interface problem is still under review. (Paragraph 5).

No violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*M. J. Ajluni, Operations Superintendent
- #\*G. B. Bockhold, Jr., General Manager, Vogtle Nuclear Operations
- \*R. M. Bellamy, Plant Manager
- F. J. Ealick, Plant Computer Engineer
- #G. R. Frederick, Quality Assurance Site Manager
- #\*W. C. Gabbard, Senior Regulatory Specialist
- H. M. Handfinger, Maintenance Manager
- T. S. Hargis, On-shift Operations Supervisor
- G. L. Hooper, Plant Computer Engineer
- #\*W. F. Kitchens, Assistant General Manager for Operations and Maintenance
- #A. L. Mosbaugh, Plant Support Manager
- R. A. Moye, Plant Computer Engineering Supervisor
- #C. F. Meyer, Operations Superintendent
- W. T. Nicklin, Regulatory Compliance Supervisor
- #\*R. M. Odom, Plant Engineering Supervisor
- #\*J. E. Swartzwelder, Operations Manager

Other licensee employees contacted included engineers and office personnel.

#### Other Organizations

- C. B. Holland, Westinghouse
- W. C. Phoenix, Consul Tec
- O. D. Hayes, Consul Tec

#### NRC Resident Inspectors

- #\*R. F. Aiello, Resident Inspector
- \*J. F. Rogge, Senior Resident Inspector, Operations
- \*C. W. Burger, Resident Inspector

\*Attended exit interview March 10, 1989.

#Attended exit interview March 31, 1989.

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

2. Power Ascension Test Procedure Review: Shutdown from Outside the Control Room (72583)

a. References

The following references were reviewed by the inspector to determine the acceptability of the test as proposed:

- (1) FSAR 14.2.8.2.45, Remote Shutdown Test,
- (2) FSAR 9.5.1.5.3, Fire Brigade,
- (3) Regulatory Guide 1.68.2 (Revision 1, July 1978), Initial Startup Test Program to Demonstrate Remote Shutdown Capability for Water-Cooled Nuclear Plants,
- (4) Preoperational Test Procedure 2-300-10, Shutdown Panel Preoperational Test, completed October 22, 1988,
- (5) Technical Specification Table 6.2-1, Minimum Shift Crew Composition,
- (6) Startup Test Procedure 2-600-10 (Revision 0), Remote Shutdown Test,
- (7) Abnormal Operating Procedure 18038-02 (Revision 2), Operation from Remote Shutdown Panels, and
- (8) NRC Inspection Report No. 50-424/88-16.

b. Discussion

Acceptable tests to demonstrate the remote shutdown capability required by GDC 19, are described in reference 2.a(3). Two tests are described: the hot standby demonstration procedure and the cold shutdown demonstration procedure. From review of reference 2.a(4), the inspector concluded that cold shutdown capability had been adequately demonstrated and that reference 2.a(6) could be limited to the hot standby demonstration.

Key features required in the hot standby demonstration include:

- (1) initiation of the test from outside the control room (trip the reactor remotely),
- (2) performance of the test with the minimum shift crew as discussed in references 2.a(2) and 2.a(5),
- (3) achievement of the hot standby after the remotely initiated trip from a power level of 10 - 25% RTP, and
- (4) maintenance of a stable hot standby condition for at least 30 minutes.

For two reactors in mode 4 or higher, reference 2.a(5) defines a minimum shift crew of eight, or four per reactor. The specification does allow one of the minimum of eight to be absent for up to two hours. Hence, one unit might be served by a crew of only three. Further, in reference 2.a(2), the licensee states that fire team manning requirements will be met without impacting the minimum

on-shift operating requirements of a three-member remote shutdown team per unit. In reference 2.a(8), the results of a walk through of the Unit 1 procedure, similar to reference 2.a(7), using three people and a simulator demonstration of remote shutdown using three people were reported as successful. Nevertheless, the proposed startup test, reference 2.a(6), assigned five people to the task. In discussions with licensee personnel, they continued to aver that a unit could be shutdown remotely with only three people without risk to the general public, but they resisted performing the required test, reference 2.a(1), with only three people on the grounds that they could not protect plant equipment. Additionally, they cannot staff all three remote panels with only three people. Reference 2.a(3) does allow non-test personnel to perform routine activities to protect equipment provided those actions do not affect the test. Attachment 10.1 to reference 2.a(6) specifies permissible actions by control room observers. All actions by the control room observers must be logged on data sheet 7.2 of that reference and will be reviewed for effect on the test before the test is accepted by the licensee.

The inspector discussed the issue with Regional management, who concluded that a minimum shift crew for this test was four persons, including not more than one senior reactor operator. The rationale was that the test was to be conducted as only a single failure, loss of control room, and that the consideration of an additional failure, such as an incapacitated operator or fire, was not a test requirement. This position was relayed to the licensee by the inspector. The licensee agreed to conduct the test with the defined minimum crew and issued revision 1 to reference 2.a(6) to implement the agreement. The four-person crew will permit staffing all three remote shutdown panels.

No violations or deviations were identified.

### 3. Power Ascension Test Procedure Review: Loss of Offsite Power (72582)

#### a. References

The inspector reviewed the following documents:

- (1) FSAR 14.2.8.2.46, Loss of Offsite Power at Greater than 10-Percent Power Test,
- (2) Regulatory Guide 1.68, Initial Test Programs for Water-Cooled Nuclear Power Plants, Appendix A, paragraph 5.jj, and
- (3) Startup Test Procedure 2-600-09 (Revision 0), Loss of Offsite Power at Greater Than 10% Power.

The proposed test is scheduled by procedure 2-600-13, Power Ascension Test Sequence, to be performed at about 17% RTP but before exceeding 30% RTP. The test, reference 3.a(3), provides for simulation of loss of offsite power by opening seven breakers on the low side of the reserve auxiliary transformer instead of the two high side breakers. Review of power distribution drawings with the licensee confirmed

that the seven low-side breakers were functionally equivalent to the two high-side breakers with respect to interrupting power to the unit. However, the two class 1E buses have under voltage relays that would be exercised by opening the high-side breakers, but would not be tested by opening the individual low-side bus breakers. Review of preoperational tests with the licensee personnel who performed them convinced the inspector that the under-voltage relays had been acceptably tested and found fully functional. Hence, reference 3.a(3) was accepted as written.

No violations or deviations were identified.

4. Review of Completed Initial Fuel Loading Procedures (72500)

The completed test procedures listed below were reviewed following completion of the licensee's review process and acceptance of the test results by plant management.

- a. 2-500-01, Initial Fuel Load Test Sequence, completed on February 17, 1989, and
- b. 2-500-02, Inverse Count Rate Ratio Monitoring for Fuel Loading, completed on February 17, 1989.

No test deficiencies or violations were identified in the review.

5. Followup on Items of Noncompliance (92702)

(Closed) Violation 50-424/88-06-01: Failure to have an adequate program to control computer software used in surveillances. The licensee's response, dated March 21, 1988, was found acceptable by Region II. The inspector's review of the corrective action, new and acceptable administrative procedures, was reported in Inspection Report No. 50-424/88-57. During this inspection, examples of software changes and the associated CSCRs on both the ERF and PROTEUS computers were inspected and discussed with the computer engineers responsible for the changes. Documentation and installation testing of the changes by the computer engineers were complete and acceptable. However, one software change to provide RCS leakage monitoring on the ERF computer was based upon a superseded version of the surveillance procedure (14905-1 Revision 19)). Furthermore, the calculation of change in inventory was based upon changes in cold-leg temperature rather than system average temperature. The operations department had not yet made use of the software or compared its performance with the surveillance procedure. The solution to this user-programmer interface problem is under review by the licensee, and will be addressed in a future inspection.

## 6. Exit Interviews (30703)

The inspection scope and findings were summarized on March 10 and 28, 1989, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. Dissenting comments were not received from the licensee. Proprietary information is not contained in this report. Licensee management confirmed their commitment to perform the remote shutdown test with a crew of four, including only one senior reactor operator.

## 7. Acronyms and Initialisms Used in This Report

CSCR - computer software change request  
ERF - emergency response facility  
FSAR - Final Safety Analysis Report  
GDC - general design criterion from 10CFR50 Appendix A  
PROTEUS - trade name for the plant computer  
RCS - reactor coolant system  
RTP - rated thermal power