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

Report Nos.: 50-424/87-05 and 50-425/87-05

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

Docket Nos.: 50-424 and 50-425 License Nos.: NPF-61 and CPPR-109

Facility Name: Vogtle 1 and 2

Inspection Conducted: January 5-9, 1987

Inspector: George Hallstrom 2/4/87
G. A. Hallstrom Date Signed

Approved by: J. J. Blake 2/6/87
J. J. Blake, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was conducted on site in the areas of licensee action on previous enforcement matters (Units 1 and 2), housekeeping (Units 1 and 2) materials control (Units 1 and 2), and welding activities associated with safety-related structures (Units 1 and 2).

Results: One violation was identified, Failure to Protect Permanent Plant Equipment, (Unit 2 only) paragraph 5.

8702190334 870211
PDR ADOCK 05000424
Q PDR

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*R. E. Conway, Senior Vice President
*P. D. Rice, Vice President, Engineering
*C. W. Hayes, Project Quality Assurance (QA) Manager
*E. D. Groover, QA Site Manager, Construction
C. E. Belflower, QA Site Manager, Operations
*G. A. McCarley, Project Compliance Coordinator
B. C. Harbin, Manager of Quality Control (QC) Construction
*A. Haralson, Electrical Discipline Manager, Construction
W. C. Gabberd, Senior Regulatory Specialist, Operations
P. Burwinkle, Operations Test Supervisor
R. Perry, Compliance Engineer, Construction
D. McCary, HVAC Discipline Engineer, Construction
D. Tamplin, HVAC Discipline Engineer, Operations
R. Hollands, Electrical Discipline Coordinator, Construction
R. R. Snell, Second Shift Superintendent, Construction

Other licensee employees contacted included construction craftsmen, engineers, technicians, mechanics, and office personnel.

Other Organizations

O. Batum, Southern Company Services (SCS), Deputy to Vice President of Engineering
D. L. Bunch (SCS), Startup Test Supervisor
D. P. Niehoff, Bechtel Power Corporation (BPC), Deputy Engineering Group Supervisor (EGS) - Civil/Structural
F. F. Ling, BPC, HVAC Group Leader
J. R. Blount, Cleveland Electric Company (CEC), Project Manager
W. H. Fish, CEC, Assistant Project Manager
R. B. Duncan, CEC, Labor Manager
H. L. Miller, CEC, Welding Coordinator
R. V. O'Keefe, CEC, Craft Instructor
B. Jones, CEC, Raceway Engineer
J. Lake, CEC, Second Shift Superintendent
S. R. Leaf, CEC, Construction Engineer

NRC Resident Inspectors

*H. Livermore, Senior Resident Inspector (Construction)
J. Rogge, Senior Resident Inspector (Operations)
R. Schepens, Resident Inspector (Operations)

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on January 9, 1987, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

(Open) Violation 425/87-05-01, Failure to Protect Permanent Plant Equipment (Unit 2 Only)

The licensee did identify as proprietary some of the materials provided to and reviewed by the inspector during this inspection; however, details from those materials are not included in this report.

3. Licensee Action on Previous Enforcement Matters

a. (Closed) Violation 424/86-93-01 (Unit 1 only) Failure to Protect Permanent Plant Equipment

GPC's letter of response dated December 19, 1986, has been reviewed and determined to be acceptable by Region II. The inspector examined the corrective actions as stated in the response. The inspector noted that the root cause of the violation was failure by operations maintenance personnel to fully implement project procedures governing post-maintenance work order activities. The inspector reviewed training of applicable project personnel regarding strict compliance to ensure that equipment covers are properly replaced after completion of maintenance activities. Cognizant licensee personnel informed the inspector of disciplinary actions to be used to ensure compliance with operations maintenance procedures.

The inspector concluded that GPC had determined the full extent of the subject violation, performed the necessary survey and followup actions to correct the subject conditions, and developed the necessary corrective actions intended to preclude the recurrence of similar circumstances. The corrective actions identified in the letter of response were implemented.

b. (Closed) Unresolved Item 424/86-93-02, 425/86-43-02, Adequacy of Field Welding Inspection Procedure

This item concerned potential need for clarification of requirements within the PPP X-18 Procedure for Field Welding Inspection. Procedure X-18 had been revised to incorporate the NRC approved generic Visual Weld Acceptance Criteria (VWAC) for Structural Weldments. These criteria have also been adopted by ASME (Code Case N-430, dated February 28, 1986) for Class NF Pipe Supports. Section 9.0, Acceptance Requirements, had been reformatted and the inspector identified a

concern regarding the potential for misinterpretation by QC inspectors between requirements for NF/structural supports and ASME code piping. The inspector held discussions with several PPP QC inspectors during this inspection and did not identify any misunderstanding of the requirements involved. The inspector concluded that NRC concern was resolved and this item considered closed.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection Effort

Housekeeping (54834B), Material Identification and Control (42902B), and Material Control (42940B)

The inspector conducted a general inspection on Unit 2 containment, the control building and the reactor auxiliary building to observe activities such as housekeeping, material identification and control; material control, and storage.

During the above inspection the inspector noted extensive electrical construction activities within the Unit 2 cable spreading room (RA 23) of the Control Building. The inspector observed an electrical craftsman using cable tray 2NE 351 TRYY as a work platform without meeting the requirements of paragraph E8.7.1S of BPC specification X3AR01-E8, Rev. 23 which allows use of cable trays as temporary platforms provided no cable is installed in the tray and one-half inch plywood is placed in the tray bottom. The inspector further noted damage to nearby cable trays 2NE 351 TW YC/YD and 2NE 351 TQ YD. The damage had occurred due to their use as walkways without the use of plywood as required. The inspector informed cognizant licensee personnel that this matter was considered a lack of conformance to 10 CFR 50, Appendix B, Criterion XIII and would be identified as Violation 425/87-05-01; Failure to Protect Permanent Plant Equipment (Unit 2 only).

6. Safety-Related Structures (Units 1 and 2)(55100)

The inspector examined welding work activities and records for HVAC control room filtration unit housings as described below to determine whether applicable code and procedure requirements were being met. Field modifications to these units were completed by Pullman/Kenith-Fortson (P/KF). The applicable codes are the AWS D1.1 Structural Welding Code - 1977 Revision and the AWS D9.1 Specification for Welding Sheet Metal - 1980 Revision.

a. Welding Procedure Specifications and Quality Assurance Procedures

(1) Welding Procedure Specifications (WPS) applicable to the weld joints listed in paragraph 6.b.(1), were selected for review and comparison with the applicable Code as follows:

WPS	PROCESS | 1 | 2	PQR
FWP-9G8-307, Rev. 1	GMAW	108 through 113 117, 162
FWP-1S1-301, Rev. 1A	SMAW	135, 136 144 through 159
FWP-1S1-301, Rev. 2	SMAW	135, 136, 165 144 through 159
FWP-9G9-304, Rev. 2	GMAW	118 through 125
FWP-9G9-304, Rev. 3	GMAW	118 through 125, 170

1. GMAW - Gas metal ARC Welding
2. SMAW - Shielded Metal Arc Welding

The above WPSs and their supporting Procedure Qualification Records (PQRs) were reviewed to ascertain whether essential, supplementary and/or nonessential variables, including thermal treatment, were consistent with Code requirements; whether the WPSs were properly qualified and their supporting PQRs were accurate and retrievable; whether all mechanical tests had been performed and the results met the minimum requirements; whether the PQRs had been reviewed and certified by appropriate personnel; and whether any revisions and/or changes to nonessential variables were noted.

(2) The below listed documents were reviewed to ascertain whether the adequate plans and procedures had been established to assure that welding would be controlled and accomplished consistent with commitments and regulatory requirements.

Document No.	Title
QP-10.2, Rev. 11A	Welding Inspection
JP-10.2, Rev. 13	Welding Inspection

b. Visual Inspection of Welds

The inspector visually examined completed welds for field modifications on HVAC Control Room Filtration Unit Housings to determine whether applicable code and procedure requirements were met. Applicable design drawings are as follows:

Unit 1 - Equipment Nos. 1-1531-N7-001 and 1-1531-N7-002

Drawing Nos. - 1X4AJ07-530 R/1
1X4AJ07-531 R/1
1X4AJ07-532 R/1

Unit 2 - Equipment Nos. 2-1531-N7-001 and
2-1531-N7-002

Drawing Nos. AX4AJ07-533 R/2
AX4AJ07-534 R/2
Ax4AJ07-535 R/2

(1) The below listed welds were examined relative to the following: location, length, size and shape; weld surface finish and appearance; transitions between different wall thicknesses; weld reinforcement--height and appearance; joint configurations on permanent attachments and structural supports; removal of temporary attachments, arc strikes and weld spatter; finish grinding and machining of weld surface, surface finish and absence of wall thinning; surface defects, cracks laps, lack of penetration, lack of fusion, porosity, slag, cxide film and undercut exceeding prescribed limits.

Weld Nos.*	Weld Nos.*	Weld Nos.*
13J	32P	84L
14J	33P	86L
18J	54E	91L
19J	58E	92L
22E	59E	94L
23J	60E	95L
24J	82L	96L
25J	63L	97L
98L		
99L		
100L		
102L		
103L		

*Each number represents 4 welds (one for each unit housing)

(2) Quality records for the welds listed in paragraph 6.b(1) were examined relative to the following: records covering visual and dimensional inspections indicate that the specified inspections were completed; the records reflect adequate weld quality; history records are adequate.

c. Welder Qualification

The following welder qualification status records and "Records of Performance Qualification Test" were reviewed relative to the weld joints listed in paragraph 6.b(1).

Weld Symbol
44 - P/KF
56 - P/KF
922 - P/KF
791 - P/KF
728 - P/KF
666 - P/KF
695 - P/KF
447 - P/KF
409 - P/KF

d. QC Inspector Qualification

The following inspector qualification status records and "QA/QC Inspector Qualification/Certification" records were reviewed relative to inspection of the weld joints listed in paragraph 6.b.(1).

Inspector	Type of Certification
GLM	VT - II
PH	VT - II
GWJ	VT - II
JP	VT - II
RS	VT - II

Within the areas examined, no violations or deviations were identified.

7. Licensee Identification Items (92700)

Prior to the inspection, the licensee identified the following items under 10 CFR 50.55(c).

a. (Open) Item 424, 425/CDR-82-32, HVAC Duct Supports - Design Inconsistencies

On September 30, 1982, the licensee notified Region II of a 50.55(e) item involving design inconsistencies between Bechtel duct support detail drawings and Pullman Construction Industries (PCI) fabrication drawings. The final report was submitted on August 15, 1983.

During review of the final report the inspector noted that 120 duct supports were identified as having significant deficiencies. Further that modification of these supports had not occurred as of the date of the final report but was intended after additional correction of the PCI drawings to conform to design requirements. Cognizant licensee personnel were unable to locate quality data confirming proof of modification of the 120 supports during this inspection. This item remains open.

b. (Closed) Item 424, 425/CDR 83-43, Pullman Construction Industries Duct Shop Detail

On June 28, 1983, the licensee notified Region II of a potential 50.55(e) item involving weld rejections on HVAC ductwork. Rejections were primarily due to undersized welds. GPC completed reinspection of a random sample of installed and uninstalled ductwork and provided results to BPC for engineering analysis.

The final report was submitted on February 24, 1984, and this item was considered not reportable. The inspector examined the background data from the reinspection and the BPC design calculations assuming a configuration worse than any conditions encountered in the sampling. The inspector concurred with the conclusion of the BPC analysis that all ductwork installations were adequate for the design load conditions. This item is considered closed.

c. (Closed) Item 424, 425/CDR 84-60, Control Room Filtration Unit Housings

On March 23, 1984, the licensee notified Region II of a 50.55(e) item involving inadequate design of the control room isolation HVAC filter housings. The control room filtration units (1-1531-N7-001, 1-1531-N7-002, 2-1531-N7-001 and 2-1531-N7-002) provide cooling, moisture elimination, high efficiency particulate filtration and activated carbon absorption (HEPA) of all the air supplied to the control room to ensure protection of the plant operators, instrumentation and equipment following a design basis accident. The BPC specification for the control room filtration unit housing required the filter plenum to withstand negative 20 inches water gage (w.g.). Due to an inadvertent error on vendor drawings the units were fabricated and installed with a design pressure of negative 2 inches w.g.

The final report was submitted on April 23, 1984. The report has been reviewed and determined to be acceptable by Region II. Corrective actions required redesign of all four control room filtration unit housings to withstand the required negative 20 inches w.g. and completion of the required field modifications (extra stiffeners and welds). The inspector held discussions with responsible licensee representatives, reviewed supporting documentation and completed field inspections (see paragraph 6) to verify that corrective actions identified on the report have been completed. This item is considered closed.

d. (Closed) 424, 425/CDR 84-64, HVAC Interior Duct Lining

On May 29, 1984, the licensee notified Region II of a 50.55(e) item involving acoustical lining attached to the inside of safety-related ductwork supplying air to the control room. Corrective actions involved removing the acoustical liner and modifying the ductwork to incorporate air baffles; i.e. an enlarged section of the duct to house welded-in-place perforated baffle sheets.

The final report was submitted on August 10, 1964. The final report has been reviewed and determined to be acceptable by Region II. The inspector held discussions with responsible licensee representatives, reviewed supporting documentation, and observed representative samples of work to verify that corrective actions identified on the report have been completed. This item is considered closed.

e. (Closed) 424, 425/CDR 84-66, Pullman Construct Industries - Duct Support Shop Welds

On June 14, 1984, the licensee notified Region II of a 50.55(e) item involving lack of required penetration in tube steel-to-tube steel welds (mitered joints) on a limited number (30) of HVAC duct supports.

The final report was submitted on September 19, 1984, and supplemented on December 12, 1986, to include alternate additional corrective actions. Corrective actions included insertion of a mandatory QC hold point for fit-up inspection of mitered tube steel joints, requirement for a backing bar for mitered joint full penetration welds, provision of an alternate T type joint detail which uses fillet and flare bevel welds and scrapping the supports that used the mitered configuration. The supplemented final report has been reviewed and determined to be acceptable by Region II. The inspector held discussions with responsible licensee representatives, reviewed supporting documentation, and observed representative examples of work to verify that corrective actions identified in the report have been completed. This item is considered closed.

f. (Closed) Item 424/CDR 84-70, Bettis Damper and Valve Actuators

On November 6, 1984, the licensee notified Region II of a 50.55(e) item involving G. H. Bettis valve and damper actuators. G. H. Bettis had previously informed the NRC of the generic potential for degraded actuator performance (failure to stroke in the required time interval) in their 10 CFR 20 report of November 18, 1983. The basis of potential degradation of actuator performance was traced to the specific combination of seals and grease used on the original actuators.

The final report was submitted on December 6, 1984. Corrective actions included disassembly of most of the actuators involved and installation of new seals and different lubrication (Molykote 44). The decision to recondition the remaining actuators was delayed pending analysis of additional test information and studies by G. H. Bettis. GPC subsequently reconditioned and completed testing of all suspect G. H. Bettis actuators which were installed on Unit 1. Corrective actions for Unit 2 actuators are not scheduled for completion until later. The inspector held discussions with responsible licensee representatives and reviewed supporting documentation to verify that all corrective actions have been completed for Unit 1. This item is considered closed for Unit 1 only.

g. (Closed) Item 424, 425/CDR 85-91, Dresser Industries Diaphragm Valves

On December 30, 1985, the licensee notified Region II of a 50.55(e) item involving Dresser Industries Diaphragm Valves (Figure 3050 Y-Pattern). Potential failure of these valves was possible due to a sharp edge on the originally designed disc cap which prevented the disc from opening under certain conditions. Corrective actions included installation of a redesigned disc cap with a chamfered edge which does not have the potential for sticking.

The final report was submitted on February 25, 1986. The final report has been reviewed and determined to be acceptable by Region II. The final report indicates that field repair will be completed for both Unit 1 and Unit 2 valves. Subsequent to the final report Unit 1 valves were repaired on-site by installation of the vendor supplied modification kits. Unit 2 valves were returned to Dresser Industries for shop repair. The inspector held discussions with responsible licensee representatives, reviewed supporting documentation, and observed representative samples of work to verify that corrective actions identified on the report have been completed. This item is considered closed.

8. Previously Identified Inspector Followup Items

(Closed) Inspector Followup Item (424/86-39-02, 425/86-19-02), Field Confirmation of Distance Between Welded Attachments and the Location of Intermediate Pipe Breaks.

This item concerned proper application of a minimum distance criteria (5D Criteria) from welded attachments for the postulation of intermediate pipe breaks on high-energy ASME Code class piping.

The inspector noted that Region II had informed the licensee by letter dated December 8, 1986, that no enforcement action would be taken regarding the inaccurate information provided to NRC on the 5D criteria (Item 424/86-39-01, 425/86-19-01) since the inaccuracies did not involve willfulness. Therefore, only item 424/86-39-02, 425/86-19-02 required further consideration during this inspection.

The inspector reviewed with cognizant licensee personnel the supplemental Safety Evaluation Report (SSER4) of Chapter 3.6.2 of the NRC Standard Review Plan (SRP) which provides NRC acceptance of arbitrary intermediate pipe break criteria.

The inspector noted that the adopted criteria included a minimum distance less than 5D for all high energy class 2 and 3 systems other than main steam and main feedwater systems. The proposed criteria ($3\sqrt{RT}$) requires greater precision regarding pipe support locations than does 5D.

The inspector's previous inspections in this area had identified need for field examinations to assure the as-built support locations in order to conduct the engineering analyses involved. The inspector had previously noted that support location tolerances for small diameter piping amounted to as much as three piping diameters. Therefore a 5D minimum distance criteria (or some alternate criteria requiring greater precision) could not be assured without field examinations.

Cognizant licensee personnel provided copy of Plant Systems Support Group (PSSG) memo no. 34 - Group No. 1, dated October 20, 1986, for the inspector's review. PSSG No. 34 provides detailed instructions to BPC engineers on the evaluation of welded attachments in the vicinity of high stress locations; i.e. application of the approved arbitrary intermediate pipe break criteria. PSSG No. 34 provides several levels of screening criteria to ensure conservatism in establishing the distance from high stress point (potential arbitrary intermediate break) to nearest welded attachment. High stress points were selected for review (screened) versus the arbitrary intermediate break criteria as follows:

- All high stress points at 10D from centerline of welded attachment
- All high stress points at 5D (or $3\sqrt{RT}$) from edge of welded attachment using worst case installation tolerance
- Field measurement by BPC engineers

The inspector informed cognizant licensee personnel that NRC concern regarding this item was resolved due to the use of PSSG No. 34 to ensure accuracy in applying the arbitrary intermediate pipe break criteria. This item is considered closed.