



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30303

APR 18 1985

Report Nos.: 50-424/85-09 and 50-425/85-09

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

Docket Nos.: 50-424 and 50-425

License Nos.: CPPR-108 and CPPR-109

Facility Name: Vogtle 1 and 2

Inspection Conducted: February 23, 1985 - March 22, 1985

Inspectors: W. F. Sanders April 12, 1985
for W. F. Sanders, Senior Resident Inspector, Construction Date Signed

J. F. Rogge April 12, 1985
for J. F. Rogge, Senior Resident Inspector, Operations Date Signed

Accompanying Personnel: B. J. Schepens, Resident Inspector, Construction

Approved by: M. V. Sinkule April 16, 1985
M. V. Sinkule, Section Chief Date Signed
Division of Reactor Projects

SUMMARY

Scope: This routine, unannounced inspection entailed 352 resident inspector hours on site (40 hours were on backshifts) inspecting: quality assurance, refueling cavity seal ring installation, refueling canal welding, containment dome reinforcing steel and tendon sheathing, cavity liner plate welding, containment post tensioning, reactor coolant system primary loop piping installation and welding, safety-related piping installation and welding, reactor vessel internals fit-up and in vessel storage activities, and storage and protection of safety-related equipment.

Results: One violation was identified (Failure to Follow Procedure to Prevent Dissimilar Metallic Materials from Coming in Direct Contact with One Another - paragraph 14).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

D. O. Foster, Vice President and Project General Manager
 P. D. Rice, Vice President and General Manager, Quality Assurance
 W. T. Nickerson, Deputy Project General Manager
 W. C. Ramsey, Readiness Review Manager
 H. H. Gregory III, General Manager Nuclear Construction
 *M. H. Googe, Project Construction Manager
 G. Bockhold, Jr., General Manager Nuclear Operations
 O. Batum, General Manager Engineering and Licensing
 C. W. Hayes, Vogtle Quality Assurance Manager
 C. E. Belflower, Quality Assurance Site Manager - Construction
 *E. D. Groover, Quality Assurance Site Manager - Construction
 S. D. Haltom, Quality Assurance Engineering Support Supervisor
 W. E. Mundy, Quality Assurance Audit Supervisor
 J. E. Sanders, Project Construction Manager - Unit 1
 D. M. Fiquett, Project Construction Manager - Unit 2
 B. C. Harbin, Manager Quality Control
 *J. L. Blocker, Assistant Quality Control Manager
 T. L. Weatherspoon, Assistant Quality Control Manager
 *G. A. McCarley, Project Compliance Coordinator
 W. C. Gabbard, Assistant Project Compliance Coordinator
 *J. O. Dorrough, Administrative Manager
 *L. N. Brooks, Civil Manager
 *M. Stone, Engineering Supervisor

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

Other Organizations

F. B. Marsh, Project Engineering Manager - Bechtel
 M. Malcom, Deputy Project Engineering Manager - Bechtel
 *D. L. Kinnsch, Project Field Engineering - Bechtel
 *D.W. Stroham, Project Quality Assurance Engineer - Bechtel
 *R. J. George, Mechanical Discipline Manager - Bechtel
 *G. H. Fredy, Project Field Engineer/APE - Bechtel
 *G. Introcaso, Administration Manager - Pullman Power
 *T. J. Pruitt, Field QA/QC Manager - NISCO
 *D. R. Murphy, Construction Engineer - Oglethorpe Power Corporation

*Attended exit interview

2. Exit Interview (30703C)

The inspection scope and findings were summarized on March 22, 1985, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings listed below. No dissenting comments were received from the licensee.

(Open) Violation 50-424/85-09-01: "Failure to follow procedure to prevent dissimilar metallic materials from coming in direct contact with one another" - Paragraph 14.

(Open) IE Bulletin No. 84-03: "Refueling Cavity Water Seal" Units 1 & 2 - Paragraph 20.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters (92702)

Not inspected.

4. Unresolved Items (92701)

Unresolved items are matters about which more information is require to determine whether they are acceptable or may involve violations or deviations. Unresolved items were not identified during this inspection.

5. Construction Inspection - Units 1 & 2 (92706C)

Periodic inspections were made throughout this reporting period in the form of general type inspections in different areas of both facilities. The areas were selected on the basis of the scheduled activities and were varied to provide wide coverage. Observations were made of activities in progress to note defective items or items of noncompliance with the required codes and regulatory requirements. On these inspections, particular note was made of the presence of quality control inspectors, supervisors, and quality control evidence in the form of available process sheets, drawings, material identification, material protection, performance of tests, and housekeeping.

Interviews were made with craft personnel, supervisors, coordinators, quality control inspectors, and others as they were available in the work areas.

a. Unit 1 independent inspection encompassed but was not limited to the following areas:

- (1) Refueling Cavity Seal Ring - Periodic inspections were conducted during the weld out of the seal ring to the reactor vessel seal ledge and the reactor cavity liner. The purpose of these inspections were to determine that the requirements of applicable specifications, codes, standards, work performance procedures and inspections (QC) procedures were being followed. This work was completed during this inspection period.

- (2) Refueling Canal - An inspection was conducted during the fit-up phase of the bellows assembly. This was a replacement bellows being installed due to the first one being damaged after installation during the grinding operation to flat top the weld. The weld prep configuration of the penetration pipe and new bellows was inspected.
 - (3) Refueling Bridge Crane Rail Installation - An inspection was conducted of the preparation activities for the installation of the tracks.
- b. Unit 2 independent inspection encompassed but was not limited to the following areas:

Cavity liner plate welding - The inspector conducted a general inspection of the welding operation, i.e., weld filler metal control and storage, fit-up cleanliness requirements, slag removal and grinding.

No violations or deviations were identified.

6. Containment (Structural Concrete) - Unit 2 (47053C)

Periodic inspections were conducted of the containment dome reinforcing steel and tendon sheathing installation and the North and South walls around the steam generators to determine that the requirements of applicable specifications, codes, standards, work performance procedures and inspection (QC) procedures are being followed.

No violations or deviations were identified.

7. Containment (Prestressing) - Observation of Work Activities - Unit 1 (47063C)

a. Procedure and Document Review

The inspector reviewed and examined implementation portions of the following specification, procedure, and quality assurance manual pertaining to the installation of vertical tendons, to determine whether they comply with applicable codes, standards, NRC Regulatory Guides and licensee commitments.

- Specification No. X2AF04, Revision 2, date of issue 7/24/84 "Technical Provisions for Containment Post-Tensioning System".
- Bechtel Log No. AX2AF04-100-7, "Field Instruction Manual for Installation of VSLE5-55 Post-Tensioning System Within Nuclear Containment Structures", Revision 4, dated 2/15/85.
- Bechtel Log No. AX2AF04-81-10, "VSL's Corporation Quality Control Program for Nuclear Power Projects", date of issue 1/19/85.

b. Installation Activities

The inspector witnessed portions of the installation activities indicated below to verify the following:

- The latest issue (revision) of applicable drawings or procedures is available to the installers and were being used.
- Tendons were free of nicks, kinks, and corrosion; were installed in designated locations; and the installation sequence and technique was per specified requirements.
- Installation crew was properly trained and qualified.
- QA inspection was properly performed by qualified personnel in accordance with applicable requirements.
- Adequate protective measures were being taken to ensure mechanical and corrosion protection during storage, handling, installation, and post installation.

The following tendons were observed:

<u>Vertical Tendon No.</u>	<u>Length</u>	<u>Seg. No.</u>	<u>Activity</u>
24-88*	578.7'	3	Tendon Initial Installation
22-90	577.9'	2	Mopping Tendon Sheathing

*Surveillance Tendon

No violations or deviations were identified.

8. Containment (Steel Structures and Supports) - Units 1 & 2 (48053C)

Periodic inspections were conducted to observe containment steel and support installation activities in progress to verify the following:

- Components were being properly handled (including bending or straightening).
- Specified clearances were being maintained.
- Edge finishes and hole sizes were within tolerances.
- Control, marking, protection and segregation were maintained during storage.
- Fit-up/alignment meets the tolerances in the specifications and drawings.

No violations or deviations were identified.

9. Safety-Related Structures (Structural Steel and Supports) - Units 1 & 2 (48063C)

Periodic inspections were conducted to observe construction activities of safety-related structures/equipment supports for major equipment outside the containment to verify that:

- Materials and components are being properly handled to prevent damage.
- Fit-up and alignment are within tolerances in specification and drawing requirements.
- Specified clearances from adjacent components are being met.

No violations or deviations were identified.

10. Reactor Coolant Pressure Boundary Piping - Observation of Work and Work Activities - Unit 1 (49053C)

During the inspection period pipe run walkdowns were performed where piping installation is near completion to determine whether the piping run is installed as shown on approved drawings and in accordance with applicable construction specifications. Specific pipe run walkdowns of ASME B&PVC, Section III, Class 1 piping inspected is listed below:

<u>ISO No./Revision</u>	<u>Pipe Run Inspected</u>
1K4-1201-049-02, Rev. 08	RCS Loop "4" Line No. 1201-049-12" From Hot Leg to Valve HV 8702A (RHR Sys. Train B Suction Line)
1K4-1204-023-02, Rev. 10 1K4-1204-023-03, Rev. 11	RHR Hot Leg Injection Crossover to RCS Hot Leg Loop No. 1
1K4-1204-021-03, Rev. 08	RHR Hot Leg Injection Crossover to RCS Hot Leg Loop No. 4

Specific areas examined during the pipe run walkdown for compliance with the applicable isometric drawings and the Plant Design and Instrumentation Construction Specification No. X4AZ01, Revision 19 were as follows:

- Vent and Drain Connection and Locations
- Instrumentation Connections and Locations
- Valve Installation and Orientation
- Line Size and Location
- Fittings Type and Location
- Pipe/Valve/Fitting End Connections
- Hanger Locations and Types

No violations or deviations were identified.

11. Safety-Related Piping - Observation of Work and Work Activities - Unit 1 (49063C)

During the inspection period, pipe run walkdowns were performed where piping installation is near completion to determine whether the piping run is installed as shown on current, approved drawings and in accordance with applicable construction specifications. Specific pipe run walkdowns of ASME B&PVC, Section III, Class II piping are listed below:

<u>ISO No./Revision</u>	<u>Pipe Run Inspected</u>
1K4-1205-001-03, Rev. 5 1K3-1205-003-02, Rev. 10	RHR Train A Suction Line From Valve HV 8701A (Line Nos. 1205-001-12" & 1205-003-12") to Elev. 160'-0" Line No. 1205-003-14"
1K4-1205-002-01, Rev. 9	RHR Train B Suction Line From Valve HV8702A (Line Nos. 1205-002-12" & 1205-004-12" to Elev. 161"-6" Line No. 1205-004-14"

Specific areas examined during the pipe run walkdown for compliance with the applicable isometric drawings and the Plant Design and Instrumentation Construction Specification No. X4AZ01, Revision 19 were as follows:

- Vent and Drain Connections and Locations
- Instrumentation Connections and Locations
- Valve Installation and Orientation
- Line Size and Location
- Fittings Type and Size
- Pipe/Valve/Fitting/End Connections
- Hanger Locations and Types

No violations or deviations were identified.

12. Reactor Vessel Protection - Unit 2 (50053C)

The inspection consisted of examination of the Unit 2 Reactor Vessel installed in containment to determine that proper storage protection practices were in place and that entry of foreign objects and debris was prevented. The inspector noted that protective covers were installed on the bottom mounted instrumentation penetrations.

No violations or deviations were identified.

13. Reactor Vessel Integrated Head Package - Unit 1 (50053C)

The inspection consisted of examination of the Unit 1 integrated head package stored on the refueling floor in its designated laydown area to determine that proper storage protection practices were in place, entry of foreign objects and debris was prevented, and that access was controlled.

No violations or deviations were identified.

14. Reactor Vessel Internals - Unit 1 (50063C)

Periodic inspections were conducted during the inspection period when the upper and lower internals were stored in the cavity in their designated storage area to determine that proper storage protection practices were in place, entry of foreign objects and debris was prevented, and that access was controlled. The inspection also included the fit-up operation, the installation of the reactor vessel internals, and the integrated head package. This activity consisted of the following tasks:

- Trial fit-up of the core barrel to the Reactor vessel to record fit-up clearances, e.g., nozzle gap measurements between the CSB and RV (with Clevis inserts) and clearance dimensions of lower radial support key, etc.
- Removal of the core barrel and storage in its designated area.
- Radial support clevis insert dowel pin reaming, installation of dowel pins, and locking bars.
- Refit-up of core barrel to the Reactor Vessel.
- Installation of the hold-down spring.
- Trial fit-up of the upper internals to record fit-up clearances.
- Installation of the Reactor Pressure Vessel integrated head onto the Reactor Vessel flange seal and trial fit-up of the stabilizer brackets.

The inspector reviewed and examined implementation portions of the following procedures or drawings pertaining to the above Reactor Vessel internals fit-up operation to determine whether they comply with applicable codes standards, NRC Regulatory Guides and licensee commitments.

- 1X4AZ06-56-3, NISCO Engineering Specification No. 4028-Vogtle-17 Revision C; Reactor Vessel Internals Assembly
- AX4AZ06-15-4, NISCO Engineering Specification No. 67, Revision C; Cleanliness Requirements and Control
- AX4AZ06-69-1, NISCO Engineering Specification No. 69, Revision A; Control, Usage and Storage of Consumables for Use on Nickel Based Corrosion Resistant Materials.
- AX4AZ06-16-2, NISCO Engineering Specification No. 4028-Vogtle-6, Revision B; General Handling Procedure.
- Process Control No. 105-17, Revision A, Reactor Vessel Internals, Installation of the Lower Radial Support Clevis Inserts.
- 1X6AB06-53-1, W Dwg. No. 6125EE14, Sht 2 of 3, Reactor Vessel Lower Radial Support Clevis Insert Gaging and Assembly.

- AX4AZ06-60-3, WPS 430-2-1, Revision D WPS for Manual GTAW of Inconel to Itself on Plate, Pipe, Tube, etc., 1/16" thru 1/4".
- PQR 801, Revision D PQR for combination GTAW/SMAW of Inconel to itself on 3/8" thick plate in 3G position.

The inspector witnessed portions of the above Reactor Vessel internals fit-up operations to verify the following:

- Lifting and handling are consistent with established requirements and precautions.
- Lifting equipment is as specified and required testing has been completed prior to lifting.
- Core barrier, upper internals, and integrated head package are placed in position within dimensional tolerances, proper axis orientation and levelness.
- Radial support clevis insert dowel pin and locking bar installation is in accordance with applicable specifications.

With regard to the above operations, the inspector noted a personnel basket had been lowered into the Reactor Vessel to allow personnel to clean the hot leg nozzle mating surfaces. During this operation the carbon steel personnel basket came in direct contact with the Reactor Vessel stainless steel cladding. The inspector questioned the licensee about this operation and observed immediate action taken to remove the personnel basket and to wrap A-cloth around it to prevent carbon steel contacting the reactor vessel cladding as required by Paragraph 5.3.8 of Engineering Specification No. ES-67, Revision C dated 5/31/84.

Failure to follow the above procedure is considered to be in violation of 10 CFR Part 50, Appendix B, Criterion V. This item was identified as Violation 424/85-09-01 "Failure to Follow Procedure to Prevent Dissimilar Metallic Materials From Coming in Direct Contact With One Another."

15. Safety-Related Components - Units 1 & 2 (50073C)

The inspection consisted of plant tours to observe protection installed components to determine that adequate protection from dirt, debris, water, or adjacent construction activities were in place.

Unit 1 equipment examined included:

- Residual Heat Removal (RHR) Pumps
- Diesel Generator
- Boric Acid Storage Tank
- Containment Spray (CS) Pumps
- Containment Penetration Encapsulation Vessel for Train A&B RHR and CS
- Auxiliary Feed Pumps

- Pressurizer
- Main Coolant Pump Casings
- Steam Generators
- Safety Injection Pumps
- Auxiliary Component Cooling Water (ACCW) Heat Exchangers
- Component Cooling Water Heat Exchangers
- ACCW Pumps
- Reactor Makeup Pumps
- Boron Injection Tank
- Cable Spreading Room Train A & B
- Integrated Reactor Pressure Vessel Head
- 4160V Train A & B Switchgear (1AA02 & 1BA03)
- 13.8KV Reactor Coolant Pump Switchgear
- Reactor Vessel Lower Internals
- Reactor Vessel Upper Internals

Unit 2 equipment examined included:

- Residual Heat Removal (RHR) Pumps
- Containment Spray (CS) Pumps
- Containment Penetration Encapsulation Vessel for Train A & B RHR and CS
- Pressurizer
- Steam Generators
- Safety Injection Pumps
- Reactor Vessel

No violations or deviations were identified.

16. Electrical (Components and Systems) - Units 1 & 2 (51053C)

Periodic inspections were conducted during the inspection period to observe safety-related electrical equipment to verify that the installation and storage were accomplished in accordance with applicable requirements. The following areas were examined during the inspections:

- Location and alignment
- Type and size of anchor bolts
- Identification
- Segregation and identification of nonconforming items
- Equipment space heating
- Rotation of motor shafts
- Lubrication and fluid levels
- Protective coatings, preservations, desiccants, inert gas blanket, etc.

No violations or deviations were identified.

17. Electrical (Cables and Terminations) - unit 2 (51063C)

Periodic inspections were conducted during the inspection period to determine whether the raceway installation and protection of installed cable is in accordance with applicable codes, standards, and NRC Regulatory Guides.

In reference to the raceway installation, the following areas were inspected to verify compliance with the applicable requirements:

- Identification
- Alignment
- Bushings (Conduit)
- Grounding
- Supports and Anchorages

In reference to the installed cable, the following areas were inspected to verify compliance with the applicable requirements:

- Protection from adjacent construction activities (welding, etc.)
- Coiled cable ends properly secured
- Unterminated cable ends taped
- Cable trays, junction boxes, etc., reasonably free of debris
- Conduit capped, if no cable installed
- Cable supported

No violations or deviations were identified.

18. Reactor Coolant Pressure Boundary (Welding) - Unit 2 (55073C)

Periodic inspections were conducted on Reactor Coolant System Primary Loop pipe welds at various stages of weld completion. The purpose of the inspection was to determine whether the requirements of applicable specifications, codes, standards, work performance procedures and (QC) procedures were being met as follows:

- Work was conducted in accordance with a process sheet which identified the weld and its location by system, references procedures or instructions, and provides for production and QC signoffs.
- Welding procedures, detailed drawings and instructions, were readily available and technically adequate for the welds being made.
- Welding procedure specification (WPS) were in accordance with the applicable ASME Code requirements and that a Procedure Qualification Record (PQR) is reference and exists for the type of weld being made.
- That the base metals, welding filler materials, fluxes, gases and insert materials were of the specified type and grade, have been properly inspected, tested and were traceable to test reports or certifications.
- That the purge and/or shielding gas flow and composition were as specified in the welding procedure specification and that protection was provided to shield the welding operation from adverse environmental conditions.

- That the weld joint geometry including pipe wall thickness was specified and that surfaces to be welded have been prepared, cleaned and inspected in accordance with applicable procedures or instructions.
- That the pipe to be welded to the component were assembled and held in place within specified gap and alignment tolerances allowed by the ASME Code.
- That a sufficient number of adequately qualified QA and QC inspection personnel were present at the work site, commensurate with the work in progress.
- That disbursement of welding material was controlled in accordance with approved procedures.

Procedure/Drawing Review

The following documents were reviewed:

- 2X4D4A17, Rev. 7, Reactor Coolant Loops
- (W) 32-III/I-8-12, Rev. A, Procedure for tacking the insert.
- 250-III/I-8-K1-A1, Procedure for welding the reactor coolant system primary loop piping.
- Process Sheet No. 2X4D4A17 003-W-02.
- Process Sheet No. 2X4D4A17 002-W-02.
- Process Sheet No. 2X4D4A17 006-W-01.
- Process Sheet No. 2X4D4A17 007-W-01.

Installation Activities

The inspection observed the above criteria on the following Reactor Coolant System primary pipe welds at various stages of weld out during the inspection period.

<u>Weld No.</u>	<u>Weld Out Stage Inspected</u>
002-W-02	Fit-up
006-W-01	1/3 out
006-W-02	Weld prep
010-W-01	Welded out
003-W-02	Welded out
007-W-01	Fit-up
007-W-02	Weld prep
011-W-01	1/3 out
011-W-01	1/3 out

No violations or deviations were identified.

19. Safety-Related Piping (Welding) - Unit 1 (55083C)

Periodic inspections were conducted on safety-related pipe welding at various stages of weld completion. The purpose of the inspection was to determine whether the requirements of applicable specifications, codes, standards, work performance procedures and QA procedures are being met as follows:

- That the weld area cleanliness was maintained and that pipe alignment and fit-up tolerances were within specified units.
- That weld filler material being used was in accordance with welding specifications that unused filler material was separated from other types of material and was stored in heated cans, and stubs properly removed from the work location.
- That there were no evident signs of cracks, excessive heat input, sugaring, or excessive crown.

Installation Activities

During the inspection period, welds at various stages were observed in the following systems:

- Residual Heat Removal System
- Component Cooling Water System
- Chemical & Volume Control System
- Nuclear Service Cooling Water System

No violations or deviations were identified.

20. IE Bulletins (IEB) - Units 1 & 2 (92703B)

(Open) IEB No. 84-03: "Refueling Cavity Water Seal", Units 1 & 2. The Resident Inspectors have reviewed Georgia Power Company's letter of March 7, 1985, File No. X7BC24, Log No. GN-543, in order to determine if the requested actions of the bulletin have been acceptably addressed. This item is also under review by the Division of Reactor Safety Test Programs Section and will be closed pending the completion of this review.