



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

Report Nos.: 50-424/84-36 and 50-425/84-36

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: December 4-13, 1984

Inspectors:

J. J. Blake  
 J. J. Blake

2/21/85  
 Date Signed

E. H. Girard  
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G. A. Hallstrom  
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S. J. Vias  
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Accompanying Personnel: A. R. Herdt (12/13/84)  
 B. Uryc (12/8-9/84)

Approved by:

A. R. Herdt  
 A. R. Herdt, Branch Chief  
 Engineering Branch  
 Division of Reactor Safety

2/22/85  
 Date Signed

SUMMARY

Scope: This special, announced inspection involved 648 inspector-hours on site in the areas of In-depth QA Inspection of Performance in Design, Installation and Inspection of Piping, Pipe Supports, Safety-Related Structures and HVAC; Followup of Worker Concerns; and Review of Previously Identified Inspection Items.

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Results: There were five violations identified (1) Failure to follow NDE Procedures; (2) Lack of procedure for UT calibration standards; (3) Inadequate procedures for installation and inspection of pipe supports; (4) Control and installation of rock bolts; and (5) design control.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. E. Conway, Senior Vice President Nuclear Power
- \*D. O. Foster, Vice President and General Manager, Vogtle
- \*P. D. Rice, Vice President and General Manager, Quality Assurance
- \*J. L. Blucker, Assistant Manager, QC
- \*D. M. Fiquett, MFCO
- \*M. H. Googe, Project Construction Manager
- \*H. H. Gregory III, General Manager, VNCD
- \*E. D. Groover, QA Site Manager
- \*B. C. Harbin, Manager, Quality Control
- \*C. W. Hayes, VQAM
- \*G. A. McCarley, Project Compliance Coordinator
- \*W. T. Nickerson, Deputy Project General Manager

#### Other Organizations

- \*O. Batum, General Manager Engineering, Southern Company Services (SCS)
- \*K. W. Caruso, Welding Engineer, Bechtel
- \*D. L. Kinnsch, Project Engineer, Field, Bechtel
- \*J. P. Runyan, QA Manager, Pullman Power Products (PPP)
- \*G. T. Introcaso, Administrative Manager, PPP

Other licensee and contractor employees contacted included 62 QC inspectors who were formally interviewed and approximately 80 QC inspectors and construction craftsmen and supervisors who were interviewed in the field at their work stations.

#### NRC Resident and Project Inspectors

- \*J. F. Rogge, Senior Resident Inspector, Operations
- \*W. F. Sanders, Senior Resident Inspector, Construction
- \*M. V. Sinkule, Chief, Project Section
- \*W. H. Rankin, Project Engineer

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on December 13, 1984, with those persons indicated in paragraph 1 above. The inspectors discussed the inspection findings listed below in detail. Some comments, concerning clarification of the findings were received from the licensee and contractor representatives. No dissenting comments were received from the licensee.

Violation, 50-424, 425/84-36-01 - Failure to follow NDE procedures (paragraphs 9.b.(5) and 10.b.(2))

Violation, 50-424, 425/84-36-02 - Lack of procedure for UT calibration standards (paragraph 10.b.(3))

Violation, 50-424, 425/84-36-03 - Inadequate procedures for installation and inspection of pipe supports (paragraphs 5.d and 6.b)

Violation, 50-424, 425/84-36-04 - Control and installation of rock bolts (paragraph 6.c.)

Violation, 50-424, 425/84-36-05 - Design Control (paragraph 6.d)

Unresolved Item, 50-424, 425/84-36-06 - Certification date for GPC NDE examiners (paragraph 11.c.(4))

Unresolved Item, 50-424, 425/84-36-07 - Reinspection by visual inspectors after grinding to explore indications discovered by NDE (paragraph 16)

Unresolved Item, 50-424, 425/84-36-08 - Documentation of as-built configuration in P/KF installations (paragraph 7.c.(3))

Unresolved Item, 50-424, 425/84-36-09 - Potential deviation of commitment to AWS D1.1 requirements for inspection for porosity (paragraph 3.c.)

Inspector Followup Item, 50-424, 425/84-36-10 - Control of welding across flanges of load bearing beams (paragraph 5.b.)

Inspector Followup Item, 50-424, 425/84-36-11 - Documentation of welding involved with addition of filler plates and shim plates allowed by PPP procedure IX-50 (paragraph 14.c.(13))

Inspector Followup Item, 50-424, 425/84-36-12 - Procedure for changing/rewriting of DRs (paragraph 7.d.(3))

Inspector Followup Item, 50-424, 425/84-36-13 - QA review of voided DRs (paragraph 7.d.(2))

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

### 3. Licensee Action on Previous Enforcement Matters

- a. (Closed) Unresolved Item 50-424, 425/84-26-03, "Missing Caps and Covers". The inspector took an extensive tour of Units 1 and 2 containment, auxiliary, and control buildings to ascertain if the piping and valves in these areas were being adequately capped in accordance with the latest revisions of PPP procedure XIII-5, "Field

Storage Procedure". The inspector determined that the capping procedure dictated by the latest procedure revision was being accomplished satisfactorily. The inspector has no further questions regarding this matter.

- b. (Closed) Unresolved Item 424, 425/84-31-01, "Discrepancies in Piping Stress Analysis Inputs". This item was reviewed as a part of the inspection effort described in paragraph 6, and as discussed in paragraph 6.d. The item has become one of the examples of Violation Nos. 50-424, 425/84-36-05, Design Control.
- c. (Open) Unresolved Item 424, 425/84-17-02, "Visual Acceptance Criteria". This item concerns deviations from the American Welding Society (AWS) D1.1 Structural Welding Code (AWS D1.1-1975). Appendix VC to Bechtel Specification X4AJ01 includes several requirements for visual acceptance of welds on Seismic 1 steel structures and supports which are less stringent than those imposed by AWS D1.1-1975. The inspectors met with licensee and contractor personnel to review a proposed Bechtel sponsored engineering justification for the relaxation of the visual inspection criteria.

At the conclusion of the meeting, the inspectors expressed the following concerns.

- o The engineering justification was not clear in the area of consideration of transverse shear in the application of the VC acceptance criteria to full-penetration butt joints.
- o The justification did not specifically address the application of the VC acceptance criteria to AISC type 1 (rigid frame) connections.
- o Explanation is required concerning the application of Appendix A rationale for AISC type 2 (simple beam) connections.
- o There was no justification presented for the exclusion of AWS D1.1-1975 porosity limits as basis for rejection of welds.

The inspectors informed the licensee that this item would remain open pending resolution of the first three items listed above.

The inspectors also informed the licensee that the exclusion of porosity from visual inspection acceptance criteria was an item of concern with nearly all of the welding inspectors interviewed during this inspection and for that reason, it would be the subject of a separate unresolved item, 424, 425/84-36-09, Potential deviation of commitments to AWS D1.1 requirements for inspection of porosity.

## 4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraphs 3, 7, 11 and 16.

## 5. Independent Inspection Effort (92706B)

- a. The inspectors conducted general inspections of the Unit 1 and Unit 2 containment auxiliary and fuel handling buildings to observe construction activities such as housekeeping, storage, and general construction activities.
- b. One of the general concerns raised during the interviews with the site QC inspectors (see paragraph 14.c.(12)) concerned the practice of welding across the flange of structural steel.

An inspection of the Unit 1 containment resulted in the identification of a number of examples where attachment of supports to structural steel was made by welding across the face of the flange.

The following supports were examined:

<u>Pipe Supports</u>	<u>Drawing Pulled</u>	<u>Discrepancies</u>
VI-1217-054-H008		
VI-2301-448-H005	✓	
VI-1217-105-H003	✓	✓
VI-2301-395-H001	✓	✓
VI-1202-196-H602	✓	✓
VI-1202-220-H024		
VI-1202-216-H022		

Electrical Supports

BS-504-111-018  
BS-503-B10-104

The inspector also reviewed drawing No. AX2D94V052, R3, Section C, which shows the attachment of unistrut to a beam flange using an intermittent weld of 2 inch welds, 6 inches on center. In the field, both supports noted were welded completely across the flange. In the drawing notes, paragraph "7" states, "when welding to structural steel beam, see field welding procedure on Dwg. AX2D94V002." This drawing states in paragraph "D" that "Welding across the flange of any existing beam (misc. or structural) is permitted with no restrictions as to weld size, provided the weld length is limited to 25 percent of the flange width..."

These notes apply to all types of field welds for field welding of miscellaneous steel to existing beams. Of four of the hanger drawings pulled for review, three had discrepancies with respect to the welds in question as shown on the drawing and what was installed in the field.

The inspectors could not find any prohibition against welding across flanges in either the AISC or AWS D1.1 standards and have concluded that it is not a safety issue. As noted above, the site drawings for making attachments to miscellaneous steel do seem to contain precautionary requirements which appear to have been ignored in at least three cases. Therefore, this will be pursued further during future inspections as the subject of Inspector Followup Item 50-424, 425/84-36-10, Control of welding across flanges of load bearing beams.

- c. During a field inspection, it was noticed that two valve handles were in direct contact with a flange top, such that the flange prevented the proper opening and closing of the valves. The valve numbers were 1-1204-X4-121 and 1-1204-X4-301, located in containment, level C near Col. C adjacent to weld joint #031-W116A. During discussions with the licensee the inspector was shown the isometric drawing (ISO) 1K4-1204-031-01 R/7 which included the valves, and a MFCRB-543F which was written to rotate the flanges by 45°. This would reposition the valve handles to eliminate the interference problem. No further action is required in this matter.
- d. During a tour of the plant the inspectors noticed various pipe supports with apparent improper installation of bolting. One pipe support V1-1418-049-H001, had bolted connections in eight places, of which none had washers installed. Bechtel Construction Specification No. X4AZ01, Division P5, Pipe Support Field Fabrication and Installation, Section P5.6.1, paragraph d. contains the following:

"Unless noted otherwise, all structural bolted connections for pipe support miscellaneous steel shall be installed in accordance with the AISC specification for structural joints using ASTM A 325 or A 490 bolts. Hardened washers shall be provided under both nut and head of bolt."

A review of PPP Procedure No. IX-50, Pipe Support Field Installation and Fabrication, did not find where this specification requirement was provided for craft and inspector use. This problem was identified as another example of the inadequate procedure for installation and inspection of pipe supports described in paragraph 6.b of this report, and is identified as Violation No. 50-424, 425/84-36-03.

6. In-depth QA Inspection of Performance - Pipe Support Design, Installation, and Inspection

a. Inspection Objectives

The objectives of the inspection were to determine whether: the site work is being performed in accordance with NRC requirements, licensee commitments and implementing procedures; the QA/QC program is

functioning in a manner to ensure that requirements and commitments are being met; and prompt and effective action is taken to achieve permanent corrective action on significant discrepancies.

b. Review of Work Procedures

The inspectors reviewed portions of the following documents pertaining to safety-related pipe support and piping systems to determine whether: the work procedures are in agreement with the licensee's commitments; design changes have been properly provided, reviewed, approved, and processed; the work procedures adequately describe critical points and methods of installation/inspection to properly reflect design intent.

- Procedure IX-50, Pipe Support Field Installation and Fabrication, 8/30/84
- Specification No. X4AZ01, Division P5, Pipe Support Field Fabrication and Installation, Rev. 13, 8/13/84
- Procedure X-18, Field Welding Inspection, 7/18/84
- Specification No. X2AP01, Division C9, Section C.9.7, Furnishing, Installation, and Testing of Concrete Anchors, Rev. 9, 10/24/84
- Procedure GD-T-26, Installation of Rock Bolt Concrete Anchors, Rev. 0, 2/13/84
- Vogtle Project Reference Manual, Part C, Engineering, Section 4, Bechtel Drawings, Rev. 3, 2/24/84
- Vogtle Project Reference Manual, Part C Engineering, Section 9, Design Calculations, Rev. 5, 2/24/84
- Vogtle Project Reference Manual, Part C Engineering, Section 20, Design Review, Rev. 5, 2/1/84

During the review, the inspectors noted that procedure IX-50, paragraph 9.4, states that variable spring supports and constant spring supports shall be installed in strict compliance with the manufacturer's instructions; paragraph 9.2 states that clamp bolts shall be tightened in accordance with the manufacturer's instructions. The inspectors held discussions with licensee's representatives and the QC inspectors with respect to the above concerns. It was found that the hanger QC inspectors conducted their inspection activities in accordance with procedure IX-50 only, (i.e., no specified manufacturer's instructions with them during the course of inspections). The concern that this lack of specificity in procedure IX-50 could have an adverse effect on quality was substantiated by a field inspection in which two

of the four hangers selected were not installed and inspected properly. Discrepancies for the aforementioned two hangers are described in paragraph 6.c. The inadequate procedures provided for QC inspection are a violation of 10 CFR 50, Appendix B, Criterion V, and along with the example shown in paragraph 5.d., are identified as Violation 424, 425/84-36-03, Inadequate procedures for installation and inspection of pipe supports.

c. Field Inspection

The inspectors selected a sample of four installed pipe hangers and five pipe racks installed in the Auxiliary Building that had been previously inspected and accepted by QC. The inspectors examined these hangers and racks to determine the adequacy of the hanger inspection program and compliance with the applicable work procedures.

<u>Hanger No.</u>	<u>Piping System</u>
VI-1203-021-H014, Rev. 4	Component Cooling Water
VI-1204-006-H033, Rev. 2	Safety Injection
VI-1204-010-H010, Rev. 1	Safety Injection
VI-1204-012-H002, Rev. 3	Safety Injection

  

<u>Pipe Rack No.</u>	<u>Reference Drawing</u>
R5179, R5180	M08G-S69 and M08G-S70 for multiple piping systems
R5185, R5223	
R5277	

The above hangers were reinspected against their detail drawings for configuration, identification, location, fastener installation, clearances, member size, welds, and damage/protection. In general, the hangers were installed in accordance with design documents with the exception of two hangers identified below:

Hanger No. VI-1204-010-H010, Rev. 1, in the safety injection system was examined. It was noted that the spring hanger was not dead loaded in that a gap of approximately 1/16-inch was observed between the eye bolt and the load pin. This spring hanger was designed to withstand 811 lbs. in the cold condition. The spring hanger at the time of this inspection was unable to withstand any loads. As a result, the as-installed hanger could not perform its intended function. The inspectors further noted that the four rock bolts attaching the hanger base plate to the wall were improperly installed in that four hardened washers, as indicated in the manufacturer's catalog, were missing.

Hanger No. VI-1204-012-H002, Rev. 3, also in the safety injection system was inspected. It was found that the two spring cans on this hanger were improperly installed in that item No. 9 in one spring can was pressing the load pin; the other spring can was able to move easily

in the horizontal direction. Each spring can was designed to withstand 420 lbs. during the cold condition. Based on as-built condition, one spring can was not taking any loads. As a result, the two spring can assemblies were not able to perform their intended functions.

The inspectors also noted that the four rock bolts securing the hanger base plate to the wall were improperly installed in that all four washers were missing.

The spring can installation discrepancies were examples of problems caused by the inadequate procedures provided for hanger QC inspections as identified in paragraph 6.b, Violation 424, 425/84-36-03.

In addition to the above hanger inspections, the inspectors examined 24 other rock bolt installations anchoring pipe racks R5179, R5180, R5185, R5223, and R5277. This, combined with the previously identified eight rock bolts for hanger installation, made a total of 32 rock bolts examined. None of the 32 rock bolts examined by the inspectors were installed with hardened washers as required by the manufacturer's instructions. The inspectors held discussions with licensee representatives with respect to the above concerns. It was determined that the personnel involved in rock bolt installation and inspection overlooked the washer requirements. The licensee later initiated a sample inspection of 62 rock bolt installations. It was found that 34 rock bolts were installed with washers and 28 rock bolts were installed without washers. Rock bolts are primarily used for ASME Class 1 piping system installation, and proper installation and inspection of rock bolts is necessary to assure proper function of the Support/Restraint System. A review of licensee's rock bolt installation and inspection procedures indicated that washers were never addressed in the text of these procedures.

The inspectors reviewed the licensee's program for the control of rock bolts after it was determined that the manufacturer supplies the rock bolts as assemblies which consist of a rock bolt, a hardened steel washer, and a nut. During inspection of the Pullman Power Products receiving and storage facilities it was found that after receipt, the rock bolt assemblies were disassembled by the warehouse staff and the bolts, washers, and nuts were stored separately. This disassembly was not controlled by a procedure of any kind, and as a result, there was no requirement to ensure that washers are supplied with the rock bolts when they are issued. This combination of problems - uncontrolled disassembly in the storage areas; installation of rock bolts without washers; and acceptance of improperly installed rock bolts - is considered to be a violation of 10 CFR 50, Appendix B, Criterion V, and is identified as Violation 424, 425/84-36-04, Control and installation of rock bolts.

## d. Design/Drawing Control

## (1) Review of Piping Drawings

The inspectors selected the following sample of three isometrics in the area of safety-related piping systems to determine whether they had been updated in accordance with licensee commitments and NRC requirements.

<u>Isometric No.</u>	<u>Piping System</u>
1K3-1203-021-03, Rev. 4 (12/1/81)	Component Cooling Water
1K3-1204-008-02, Rev. 14 (12/6/84)	Safety Injection
1K3-1301-001-01, Rev. 11 (10/7/84)	Main Steam

Isometric No. 1K3-1204-008-02, Rev. 14, in the safety injection system was examined. It was found that the isometric was not revised to reflect the changes when hanger No. VI-1204-008-H002 at node point 100 and hanger No. VI-1204-010-H001 at node point 310 were voided on December 28, 1981. The inspectors further noted that the above two hangers were changed to VI-1204-008-H017 (snubber) and VI-1204-010-H010 (spring), respectively, on the same day noted above. These two revised hangers were not identified on the isometric issued on December 6, 1984.

Isometric No. 1K5-1301-001-01, Rev. 11, dated June 8, 1984, in the main steam system was reviewed. It was again noted that the isometric was not revised to reflect the changes when hanger No. VI-1301-008-H050 at node point 147 was voided on April 28, 1983, and hanger No. VI-1301-008-H051 at node point 147A was voided on April 21, 1983. The above two hangers were changed to VI-1301-008-H055 and VI-1301-008-H056, respectively, on January 26, 1983. These two revised hangers could not be found on the isometric issued on June 28, 1984.

In accordance with Vogtle Project Reference Manual, Part C, Engineering, Section 4, outstanding drawing change notices (DCN) and drawing change notices - resident (DCN-R) must be incorporated in a revision to the related drawing when the drawing is being issued. A DCN shall be used for changes to original drawings that are the responsibility of BPC home office engineering; a DCN-R shall be used for changes to original drawings that have been transferred to the job site.

## (2) Review of Piping Stress Analyses

The inspectors reviewed portions of the stress analyses performed by Bechtel home office and Westinghouse V-SAMU personnel for isometric 1K3-1204-008-02 in the safety injection system. Bechtel's stress calculation no. X4CP-7010, sheet 1a, dated

March 9, 1983, table of contents, had not addressed the fact that Hanger No. VI-1204-008-H002 was revised to VI-1204-008-H017 and Hanger No. VI-1204-010-H001 was revised to VI-1204-010-H010. The same system was reanalyzed by V-SAMU engineering dated December 5, 1983. Prior to the reanalysis, a field walkdown had been performed using the isometric to incorporate all the applicable changes such that the reanalysis would reflect the as-built configurations. A review of the reanalysis revealed that the stress analysis had not reflected the two hangers that were voided and replaced by two new hangers, VI-1204-008-H017 and VI-1204-010-H010 by Bechtel. The V-SAMU engineering personnel were aware that the two hangers were voided prior to performing stress analysis. In accordance with V-SAMU's stress analysis, the previously voided hangers, VI-1204-008-H002 and VI-1204-010-H001, were still valid and were revised to two rigid restraints. The inspectors further noted that Hanger No. VI-1204-010-H001 which was revised to VI-1204-010-H010 by Bechtel had been installed and inspected by the site QC.

Vogtle Project Reference Manual, Appendix 2, Engineering Field Procedures, Section 17, states that conformance of design calculations to design changes is required to ensure that applicable engineering and field changes are accounted for and have been considered within the final calculations.

(3) Review of Hanger Calculations

Bechtel engineering personnel changed rigid hanger No. VI-1204-010-H001 to spring hanger VI-1204-010-H010; changed rigid hanger VI-1204-008-H002 to snubber hanger VI-1204-008-H017 in the safety injection system. The design calculations for the new hangers were not available at the site for review even though they should have been transferred to the site. A search of site document control and telephone calls to the Bechtel Design Offices failed to locate these two hanger design calculations.

This appeared to be similar situation to the potential deficiency concerning pipe support calculations which was reported to NRC on March 25, 1983, and later determined to be not reportable. (Ref. Georgia Power letters dated April 29, 1983 and March 26, 1984.)

(4) Discrepancies in Piping Stress Analysis Inputs

This matter was previously identified to the licensee as Unresolved Item, 424, 425/84-31-01. A review of the design calculations revealed that coefficients of thermal expansion used in the stress analyses were based on ASME 1980 Code which is less conservative than the applicable ASME Code for Class 2 and 3 piping which is

the 1974 edition, including addenda through summer of 1975. The inspectors further noted that the moduli of elasticity used in the stress analyses were based on carbon steel ( $E_c = 27.9 \times 10^6$  psi). The actual material used was stainless steel SA-321, TP 304, for which  $E_c = 28.3 \times 10^6$  psi. In addition, design calculation sheet no. 3 of 1K5-1202-036-91 showed errors in seismic acceleration calculation at data point 185 for which the maximum acceleration was obtained by the square root of the sum of the squares (SRSS) method. The seismic inputs to be used for the stress analysis should be obtained from the applicable response spectra instead of the SRSS method noted above.

(5) Results

The problems identified in paragraphs 6.d.(1),(2),(3) and (4) above are considered to be examples of a violation of the requirements of 10 CFR 50, Appendix B, Criterion III and are identified as Violation 424, 425/84-36-05, Design Control.

7. In-depth QA Inspection of Performance - Welding and Welding Inspection, HVAC, and Nonconformance Control (35061)

a. Inspection Objectives

The objective of this part of the inspection was to determine if site work activities are being performed in accordance with NRC requirements and licensee commitments.

The inspection involved review of procedures, observation of work activities, discussions with craft and QC personnel, and review of quality records.

b. Field Drawings and Work Procedures

The inspectors reviewed the following procedures to determine if they were in compliance with NRC requirements and licensee commitments:

Pullman Power Products (PPP)

<u>Procedure No.</u>	<u>Revision Date</u>	<u>Title</u>
XV-2	7/11/84	Procedure for Handling Nonconformances (Field)
XVI-1	10/15/84	Procedure for Assigning Cause and Trending Codes to DRs
XVI-2	04/26/84	Corrective Action Procedure

XIII-5

09/24/84

Field Storage Procedure

Pullman Construction Industries/  
Kenith-Fortson Co. Inc. (P/KF)

<u>Procedure No.</u>	<u>Revision Date</u>	<u>Title</u>
JP-3.1	R8 - 09/24/84	Design Control
JP-15.1	R6A - 09/05/84	Nonconformance Control
JP-15.2	R1A - 12/05/84	Deviation Control
JP-16.1	R3 - 06/07/84	Corrective Action
QP-10.6	2A - 12/05/84	Support Inspection

c. Field Inspection

The inspectors held discussions with PPP and P/KF craftsmen and QC inspectors and observed work activities to determine the adequacy of the work and to assess the individual's knowledge of the applicable quality requirements related to their work. Activities observed included the following:

(1) Pipe Welding (PPP)

The inspectors observed and discussed with the involved craftsmen the completion of the welding of the root pass of weld 041-W-08 (Unit 1) on Isometric 1K1204-041-02R8. This was a butt weld in 6" diameter X 0.719" thick ASME Section III, Class 2 stainless steel piping in the safety injection system. The discussions and observations were conducted to determine the following in compliance with the licensee's procedural documents and the applicable code, ASME Section III (77W77).

- Knowledge of craftsmen regarding welding procedure requirements on process sheets, welding material requirements and QC holdpoints.
- Welder (FH2) qualified (based on verification of listing in qualification log).
- Visual weld quality.
- Fitup verified by qualified QC inspector (verified from Qualification Listing).
- Weld material issue slips in agreement with material in use.
- Proper entries on weld process sheets.
- Routine surveillance of welding by the licensee (based on discussions with craftsmen).

(2) Field Storage of Piping (PPP)

The inspectors toured the auxiliary and control buildings and the containment several times on different days observing the field storage and protection of piping for compliance with PPP procedure XIII-5. Examples of specific areas observed for proper piping storage included:

- RHR pump rooms (Units 1 and 2) in auxiliary building
- Rooms containing chemical and volume control system vessels (Unit 1) in the auxiliary building
- Storage locations adjacent to periphery of inside of containment (all levels) (Unit 1)
- Areas adjacent to and including the steam generators and pressurizer (Unit 1) in the containment
- Areas adjacent to and including containment air coolers in (Unit 1) containment - Note: There were six examples of piping left without covers over flanges in this area. Additional inspection showed that this appeared to be an isolated instance.

(3) Installation of HVAC (P/KF)

The inspectors observed welding and inspection activities involved with the installation and inspection of safety-related HVAC equipment. During this inspection, the inspectors noted that there appeared to be a discrepancy between the documentation and the as-built configuration in that P/KF drawings DS-108A119-36, -38, -39, and -40 indicate that rectangular duct work would be installed; whereas, a circular duct with an internal brace had been installed. This apparent discrepancy was identified as an Unresolved Item No. 50-424, 425/84-36-08, Documentation of as-built configuration in P/KF installations.

(4) Containment Pipe Rack Welding and Inspection (PPP)

The inspectors observed the welding, weld repair activities, and inspection activities associated with the erection of the pipe racks in the containment. Discussions about procedure requirements were held with field engineering craft and inspection personnel involved with the activities. Additional discussion concerning the pipe racks is contained in paragraph 16 of this report.

d. Nonconforming Item Reports (NCRs)

The inspectors examined the PPP program for reporting and handling of field construction deficiencies to verify compliance with the requirements of PPP procedures XV-2, XVI-1, and XVI-2. The examination involved discussions with responsible QA/QC personnel; review of the DR log and selected DRs; and examination of a condition described in DR 7612.

(1) Discussions with QA and QC Personnel

In a previous NRC inspection, discussions with PPP personnel indicated a concern relative to the reporting and handling of construction discrepancies, which were at that time, documented on nonconformance reports (NCRs). The principal concern was that discrepancies might not be accurately identified because the NCRs were being voided or rewritten, sometimes incorrectly, without feedback to the originator - such that he could take steps to correct any errors. The concern was identified as Inspector Followup Item 424, 425/84-05-08. The procedure for reporting and handling of discrepancies was changed by PPP subsequent to identification of the above followup item. The reports are no longer NCRs but are now termed deviation reports (DRs). The changed procedure (XV-2) requires that copies of DRs dispositioned use-as-is, repair, or rework be sent to the QC inspector. The NRC inspectors understand that this means that a copy of the DR is sent to the originating QC inspector once one of the above dispositions is approved. In such case, the originator would be provided the opportunity to object if the reported conditions were improperly interpreted and/or rewritten. A large number of PPP QC personnel were questioned relative to the handling of DRs and some continued to have concerns regarding the possible failure to correct discrepancies because of incorrect changes or voiding of DRs. (These concerns are addressed in more detail below.) Generally, the QC inspectors indicated they were getting feedback on changes to their DRs. However, some were uncertain as to what their responsibilities were when a DR was changed or voided in apparent error.

(2) Review of the DR Log and Selected Examples of DRs

The NRC inspectors reviewed the licensee's log of DRs for the period of 10/16/84 through 12/11/84 which included over a thousand DRs, (DRs 6849 through 7852). From the log, the NRC inspectors selected 36 DRs for detailed review. The selection included DRs selected specifically because they represented examples of voiding

and superseding, several because the topics they addressed were of interest, and a block was selected to include a number of DRs for which the dispositions had been completed (closed DRs). The DRs reviewed and their status were as follows:

<u>DR No.</u>	<u>Status</u>	<u>DR No.</u>	<u>Status</u>
7782	Voided	6992	Closed
7712	Voided	6993	Closed
7655	Voided	6994	Closed
7612	Voided	6995	Closed
7613	Voided	6996	Closed
7589	Voided	6997	Voided
7556	Voided	6998	Open
7563	Voided	6999	Open
7564	Voided	7000	Open
7732	Superseded - Closed	7001	Closed
7139	Superseded - Open	7002	Closed
7641	Superseded - Closed	7003	Open
7494	Superseded - Closed	7004	Closed
7656	Superseded - Closed	7005	Closed
7213	Superseded - Open	7006	Voided
7052	Superseded - Closed	7009	Open
7618	Open	7008	Open
7540	Open		
7092	Open		

As part of the review, the inspectors questioned the QA Engineer (QAE) responsible for DRs regarding items noted in reviewing the DRs and received replies as indicated below:

- (a) DR 7001: The NRC inspectors noted that dated initials beside the reporting QC inspector's printed name and a correction to his name were not those of the QC inspector. Also, the DR mentioned an undersize flange and the inspectors questioned whether this was intended to be part of the DR.

The QAE responded that the DR had been rewritten and the initials were those of the individual who rewrote the DR. Further, he stated that the undersize flange condition should have clearly been a DR item and, due to lack of clarity in rewriting, it had not been properly dispositioned. (However, the QC inspector who originally wrote the DR had caught the error and submitted another DR to address the undersize I-beam flange).

- (b) DRs 7712, 7589, and 7782: The NRC inspectors noted that these DRs were voided even though they represented apparent errors that were required to be and were addressed. 7712 and 7589 reported conditions that did not comply with the applicable drawings, and drawing changes were necessary.

7782 addressed a holdpoint that was missed. The conditions described in the DRs were not serious and required no changes to hardware, but it did not appear that they should have been voided. It appeared that these DRs addressed conditions that should have been trended. The QAE could not reply to this concern without knowing more about the specific DRs. The inspectors were concerned that these voided DRs were not reviewed by QA for trending purposes. The licensee was informed that this concern would be identified as Inspector Followup Item 424, 425/84-36-13, QA review of voided DRs, and examined in greater detail in a subsequent inspection.

- (c) DR 7612: The NRC inspectors noted that this DR described a clearance deficiency in great detail but that it was voided based on another inspector's contention that the clearance was met. The NRC inspectors asked to check the condition in order to understand the basis for the original deficiency and the voiding of the DR.

The QAE referred the NRC inspectors to licensee QC personnel who showed them the condition as described in (3) below.

(3) Examination of Condition Described in DR 7612

The NRC inspectors observed the condition described in previously voided DR 7612 and found that the condition was as originally described in the DR and that it was indeed a deviation from stated requirements. The DR addressed a condition of insufficient clearance between a pipe (Unit 1, safety injection system) and the sleeve through which it passed into an adjacent room. The pipe remained unwelded at one end, but a few feet beyond the sleeve through which it passed into the adjacent room, it was welded to a vessel nozzle. It appeared that the pipe could not be brought to the proper clearance without either cutting and rewelding or applying a severe cold spring stress. The QC inspector and craft involved when the DR was voided all attested that the clearance had been correct when the DR was voided. The NRC inspectors were unable to see how this could have been possible unless the pipe had been cold sprung. QC personnel stated that another DR would be written against the discrepant condition. It appeared that the unsatisfactory clearance would have been identified by a subsequent QC inspection; however, this did not justify the apparent error made in voiding DR 7612.

Based on their review of the DR procedure and of implementation of the procedure, the inspectors consider that there are the following concerns which require followup relative to the PPP procedure for documenting and handling reports of field construction deficiencies:

- The procedure (XV-2) does not indicate the basis that may be used for voiding DRs and it appears that there may be conditions that are voided and not addressed that should be trended.
- The procedure does not provide responsibility to the originator to confirm that his DRs are properly understood and for him to inform management of any DR that is improperly changed or voided.
- The procedure does not clearly describe what is done with the original DR if it is changed or voided.
- The method for changing (rewriting) a DR is not described in the procedure.

The inspectors did not find any evidence that the concerns described regarding the PPP DR procedure had resulted in or clearly would result in a safety significant deficiency. However, the inspectors considered that the concerns were sufficient to require further examination in future inspections and this matter was identified as Inspector Followup Item 424, 425/84-36-12, Procedure for changing/rewriting of DRs. This expands on previously identified Inspector Followup Item 424, 425/84-05-08 and will replace it.

e. Audits

- References:
- (a) Audit MD 11-84/08, QA Audit of Pipe Supports, dated 5/4/84, covering the period from 1/30/84 through 2/24/84
  - (b) Audit Finding Report MD 11-84/08 #614, closed 9/24/84
  - (c) Audit Finding Report MD 11-84/08 #615, closed 7/27/84
  - (d) Audit Finding Report MD 11-84/08 #616, closed 9/24/84
  - (e) Audit Finding Report MD 11-84/08 #617, closed 6/22/84

The inspectors reviewed audit reference (a) and Audit Finding Reports (ref.) (b) through (e) to verify the following:

- (1) The audit represented a meaningful, effective evaluation of contractor and licensee performance.
- (2) The corrective action in response to the findings was timely and complete.

There were no violations or deviations noted in this area of the inspection.

8. In-depth QA Inspection of Performance - Nondestructive Examination Programs (35061)

The inspector reviewed the quality assurance program sections applicable to nondestructive examination (NDE) for the licensee, Georgia Power Company (GPC), and two contractors, Pullman Power Products (PPP) and Nuclear Installation Services Company (NISCO).

The inspector reviewed the documents identified below to determine whether adequate QA plans and procedures, including QC procedures had been established (written, reviewed, approved, and issued) to assure accomplishment and control of the related activities:

Georgia Power Company (GPC)

<u>Procedure Number</u>	<u>Title</u>	<u>Rev.</u>
QC-A-01	Qualification and Certification of Technical Inspectors	FPCN 2 (8-10-84)
QC-A-02	Inspection Training Requirements	FPCN 10 (10-2-84) Rev. 2 (6-14-84)
QC-T-05	Visual Inspection	Rev. 6 (10-11-84)

Pullman Power Products (PPP)

<u>Procedure Number</u>	<u>Title</u>	<u>Latest Rev. Date</u>
II-2	Levels I and II Nondestructive Examination Personnel Control, and Administration of Training, Examination, Qualification and Certification	6/26/84

Nuclear Installation Services Company (NISCO)

QA Manual Section 3	Document Control	Rev. D 7/12/84
QA Manual Section 5	Material Control	Rev. D 7/12/84
QA Manual Section 6	Process Control	Rev. D 7/12/84
QA Manual Section 8	Inspection Testing and Examination	Rev. B 5/5/83
QA Manual Section 9	Calibration	Rev. D 7/12/84

The inspection activities involving review of NDE procedures and observation of specific NDE operations are described in paragraphs 9, 10, 11, 12, and 13 of this report.

There were no violations or deviations identified during the review of the QA program.

9. Magnetic Particle Examination Procedure Review/Work Observation/Record Review (57070)

a. Procedure Review

- (1) The below listed PPP, NISCO and GPC magnetic particle NDE procedures were reviewed by the inspector to ascertain whether essential examination variables are defined and whether these variables are controlled within the limits specified by the applicable code and other specification requirements.

<u>Procedure No.</u>	<u>Title</u>	<u>Latest Rev. Date</u>
PPP IX-MT-5-AWS75	Magnetic Particle Examination Procedure for Structural Steel AWS D1.1-1-75, Section 6 and ASTM E709-80 (formerly E109) Prod Technique	04/04/83
PPP IX-MT-1-W77	Magnetic Particle Examination Procedure Continuous Prod Method Winter 1977 Addenda	09/28/84
GPC QC-T-06	Magnetic Particle Inspection	Rev. 4 10/25/84
NISCO ES 100-1	Magnetic Particle Inspection (Dry Powder)	Rev. A 08/23/82

- (2) In addition to the above review, the procedures were analyzed in the area of technical content relative to magnetizing method, surface preparation, magnetic particle contrast, surface temperature, light intensity, coverage, prod spacing, magnetizing current, yoke pole spacing and acceptance criteria.

b. Work Observation

- (1) Observation of magnetic particle examinations was confined to those being performed by PPP examination personnel due to the absence of magnetic particle examinations being performed by NISCO and GPC during this inspection period. The welds identified below were examined by PPP examination personnel and observed by the inspector.

<u>ISO/Drawing No.</u>	<u>Field Weld I.D.</u>	<u>Examination Procedure</u>
MO1G-S91-R0003	Col. #10 to Beam #18	IX-MT-5-AWS75
MO1G-S91-R0002	P40 to C10	IX-MT-5-AWS75
IF6-1401-031-5 R/1	595-WJ-S-3 WEST	IX-MT-1-W77

- (2) Observation of the magnetic particle examination performed on the above listed weld samples was accomplished in order to: determine whether the applicable instructions specified the test procedure to be used and that a copy of the procedure was available in the area where the work was being performed; determine whether the required equipment and materials (as specified in the examination procedure) was available at the work station; determine whether the specific areas, locations, and extent of examination was clearly defined; determine whether the type and color of ferromagnetic particles used, material surface preparation, material surface temperature, examination technique, prod condition, magnetizing current, prod spacing, and demagnetization was as specified in the applicable test procedure; and to ascertain whether any revealed indications were evaluated, dispositioned, and reported in the manner prescribed by the applicable procedure.
- (3) Two of the examined welds, Col. #10 to Beam #18 and P40 to C10, had linear indications at the weld toe areas and weld repair orders were issued for these two welds. The third weld observed did not reveal any reportable indications.
- (4) Selection of two of the above welds for observation was made by PPP since these were the only ones available at the time of this inspection. The third weld, Col. #10 to Beam #18, was requested after a general examination of the area by the inspector revealed magnetic particles clinging to the weld in the toe area. The third weld had previously been inspected and accepted on 7/13/84 by PPP.
- (5) In addition to the above, during the examination of welds using magnetic particle procedure IX-MT-5-AWS75, the inspector noted that a magnetic field indicator was not being used to determine the adequacy of the magnetic field strength as required by the procedure. Discussion with the PPP examiner revealed that this procedure requirement was unknown to him. Failure to follow procedure for activities affecting quality is in violation of 10 CFR 50, Appendix B, Criterion V, and is an example of Violation 50-424, 425/84-36-01, Failure to follow NDE procedures.
- (6) The three welds were examined by PPP personnel with a Magnaflux P-90 instrument, serial No. 801526, Control No. 1024175, with a calibration sticker attached indicating calibration had been performed 2/84 and would again be due 2/85. The magnetic particles used were No. 8A red.

- (7) NISCO personnel were requested by the inspector to perform a lift test on their AC yoke serial #76166 using their 10 pound yoke test plate #76165. The last documented lift test had been performed on 10/1/84. The test was satisfactorily performed.

c. Record Review

- (1) A review of qualification records, as listed below, for magnetic particle examination personnel was accomplished to determine whether the qualification records properly reflect the employer's name, person certified, activity qualified to perform, level of qualification, effective period of certification, signature of employer's designated representative, basis used for certification, annual visual acuity, color vision examination, and periodic recertification.

<u>Organization</u>	<u>No. Reviewed</u>
GPC	2
PPP	6
NISCO	2

- (2) Records of magnetic particle examinations performed on the three welds listed in 9.b.(1) above were reviewed for compliance with procedure requirements.

Within the areas examined, no violations or deviations were identified, except as noted in paragraph 9.b.(5).

10. Ultrasonic Examination Procedure Review/Work Observation/Record Review (57080)

a. Procedure Review

- (1) The below listed ultrasonic NDE examination procedures were reviewed to ascertain whether the procedure contains sufficient information to assure that all essential parameters are specified and controlled within the limits permitted by the applicable code or specification requirements.

PPP X-20 (A)	Ultrasonic Thickness Measurement of Materials (w/DIGI-Sonic Model 502 Ultrasonic Digital Thickness Gage)	12/12/83
PPP X-20 (B)	Ultrasonic Thickness Measurement of Materials (w/Nortec Model NDT-124D Ultrasonic Digital Thickness Gage)	12/12/83

PPP IX-UT-1-W77	Ultrasonic Examination of Weldments, Winter 1977 Addenda	04/02/82
PPP IX-UT-2-W77	Ultrasonic Examination of Seamless and Welded Tubular Material, Winter 1977 Addenda	12/18/81
PPP SI-69	Ultrasonic Thickness Measurement of ISI Weld Preparation	11/05/84
NISCO E.S. 100-4-1	Procedure for Ultrasonic Examination	Rev. A 06/05/84

- (2) In addition to the review above, the procedures were analyzed in the areas of technical content relative to type of apparatus to be used including frequency range as well as linearity and signal attenuation accuracy requirements; extent of coverage (beam angles, scanning surface, scanning rate and directions) as well as the scanning technique; calibration requirements, methods and frequency including the type, size, geometry, and material of calibration blocks as well as location and size of calibration reflectors within the block; the sizes and frequencies of search units specified and that they are consistent with applicable requirements; beam angle or angles are specified and that they are consistent with the applicable requirements; methods of compensation for the distance traversed by the ultrasonic beam as it passes through the material including distance - amplitude correction and transfer mechanism; reference reflectors for accomplishing transfer and the frequency of use of transfer mechanisms; examination reference level for monitoring discontinuities and the scanning gain setting is specified and that these values are in accordance with applicable requirements; the methods of demonstrating penetration and coverage are established; the levels or limits for evaluation and recording of indications are specified and are in accordance with applicable requirements; the method of recording significant indications and that the reporting requirements are in accordance with applicable requirements; and the acceptance limits are in accordance with the applicable requirements.

b. Work Observation

- (1) Due to the limited number of ultrasonic examinations being performed during this inspection period, only one ultrasonic thickness examination was observed. The ultrasonic thickness examination was performed on, and adjacent to, a 4" stainless steel reactor coolant system weld identified on isometric 1K4-1201-029-01 (R-7) as shop weld "C" 029-S-03. Ultrasonic thickness was being performed after the weld and adjacent area were prepared for Inservice Inspection (ISI) to assure material minimum thickness requirements after ISI preparation operations.

The thickness measurements were to be performed in accordance with site instruction, SI-69, Rev. 0, Ultrasonic Thickness Measurement of ISI Weld Preparation, which references PPP Procedure X-20(A) or (B) as the controlling technical ultrasonic thickness procedure. The procedure selected for use in this case was X-20(B).

- (2) At the conclusion of the calibration portion of the ultrasonic thickness gaging procedure using the Nortec NDT-124D thickness gage, serial No. B-17-B-1, with a pitch-catch 5.0 MHz transducer, serial No. 83102, the inspector noted that an intermediate thickness reading to confirm the calibration accuracy of the ultrasonic instrument was not performed as required by paragraph 3.2.4 of Procedure X-20(B). Later discussion with the ultrasonic examiner revealed that he was not totally cognizant of the procedural requirement for a three-point calibration check, i.e., above, below, and within the anticipated thickness gaging range. Failure to follow procedure for activities affecting quality is in violation of 10 CFR 50, Appendix B, Criterion V, and is an example of Violation 50-424, 425/84-36-01, Failure to follow NDE procedures.
- (3) In addition to the above, the inspector observed that two metal calibration blocks were being used during the instrument calibration portion of the procedure. One of the metal blocks was identified as stainless steel and was identified by serial No. 791559. The other metal block was not identified in any manner. Discussion with the ultrasonic examiner indicated that the unidentified block had been used on several occasions by himself and others and he was of the opinion, or had been told, that the metal block was stainless steel. Further investigation by the inspector determined that PPP had not established a procedure to ensure that ultrasonic calibration blocks are properly identified and controlled in order to prevent the use of these blocks in a situation which could cause unnecessary rejection and repair of products or, in some cases, acceptance of inferior products. Failure to have documented procedure for activities affecting quality is in violation of 10 CFR 50, Appendix B, Criterion V, and is an example of Violation 50-424, 425/84-36-02, Lack of procedure for UT calibration standards.

c. Records Review

- (1) A review of qualification records, as listed below, for ultrasonic examination personnel was accomplished to determine whether the qualification records properly reflect the employer's name, person certified, activity qualified to perform, level of qualification, effective period of certification, signature of employer's designated representative, basis used for certification, annual visual acuity, color vision examination, and periodic recertification.

<u>Organization</u>	<u>No. Reviewed</u>
GPC	1
PPP	8
NISCO	1

Within the areas examined, no violations or deviations were identified, except as noted in paragraphs 10.b.(2) and 10.b.(3).

11. Liquid Penetrant Examination Procedure Review/Work Observation/Record Review (57060)

a. Procedure Review

- (1) The below listed PPP, NISCO, and GPC liquid penetrant NDE procedures were reviewed by the inspector to ascertain whether essential examination variables are defined and whether these variables are controlled within the limits specified by the applicable Code and other specification requirements.

<u>Procedure No.</u>	<u>Title</u>	<u>Latest Rev. Date</u>
PPP IX-PT-1-W77	Penetrant Examination Procedure to ASME Section III Winter 1977 Addenda	6/29/84
GPC QC-T-08	Liquid Penetrant Inspection	Rev. 5 10/25/84
NISCO E.S. 100-2	Liquid Penetrant Examination	Rev. E 07/23/84

- (2) In addition to the review above, the procedures were reviewed in the area of technical content relative to
- o Specified Test Method Requirements
  - o Brand names and specific types (number or letter designation if available) of penetrant, penetrant remover, emulsifier and developer.
  - o Penetrant materials used for nickel base alloys are required by procedure to be analyzed for sulfur using the method prescribed by the applicable Code.
  - o Penetrant materials used for the examination of austenitic stainless steel are required by procedure to be analyzed for total halogens using the method prescribed in the applicable Code.

- Methods for acceptable pre-examination of surface preparation are specified and consistent with the applicable Codes. The area to be cleaned is consistent with applicable Code requirements. The cleanliness acceptance requirements are consistent with applicable Code requirements. The surface area to be examined is consistent with applicable Code requirements.
- Establishing A Minimum Drying Time Following Surface Cleaning
- Method of penetrant application and the penetration (dwell) time are specified and that the penetration time is consistent with the penetrant manufacturer's recommendation.
- Examination surface temperature is specified and is consistent with the applicable Code.
- Methods for removal of solvent removable penetrant are specified.
- Method and time of surface drying prior to developing are specified.
- Type of developer to be used, method of developer application and the time interval between penetrant removal and developer application are specified.
- Examination of technique and the permitted time interval during which the "final interpretation" are performed within the range of 7-30 minutes after developer application.
- Minimum light intensity at the inspection site is prescribed.
- Technique for evaluation of indications is specified, acceptance standards are included and these are consistent with applicable Code and specification requirements.
- Reporting requirements are specified.
- Procedure requalification is required when changes are encountered in any of the following parameters: surface treatments which may alter the condition of surface openings; any change in precleaning materials or methods; any change in the type of penetrant materials (including developer, etc.) or in processing technique; and any change in surface examination temperature limits.

## b. Work Observation

- (1) Observation by the inspector of liquid penetrant examinations being performed by PPP, NISCO, and GPC liquid penetrant examiners was accomplished on the below identified welds and components.

<u>Examined By</u>	<u>Weld/Item Identification</u>	
NISCC	GAE-36-J-14	Bottom Mounted Instrumentation Socket Weld
NISCO	GAE-52-L-15	Bottom Mounted Instrumentation Socket Weld
NISCO	GAE-43-H-11	Bottom Mounted Instrumentation Socket Weld
GPC	031-W-116 A	Drawing No. 1K4-1204-031-1 R/7 Safety Injection System
*GPC	702K/M15	Diesel Generator Piston Skirt Type AE/Stud Boss Area Part No. 02-341A, Equipment No. 2-2403-G4-001, Serial No. 76023-2873
*GPC	570K/K5	Diesel Generator Piston Skirt Type AE/Stud Boss Area Part No. 02-341A, Equipment No. 2-2403-G4-002, Serial No. 76024-2874
PPP	002-W-113	Drawing No. 1J4-1513-002-01 R/0 CTB Electrical Hydrogen Recombiner System
PPP	486-W-127	Drawing No. 1K4-1208-486-01 R/2 Chemical Volume Control System
PPP	486-W-126	Drawing No. 1K4-1208-486-01 R/2 Chemical Volume Control System
PPP	486-W-125	Drawing No. 1K4-1208-486-01 R/2 Chemical Volume Control System
PPP	486-W-124	Drawing No. 1K4-1208-486-01 R/2 Chemical Volume Control System

\*Examined in a shop staging area. All other examinations were in the Unit 1 containment areas.

- (2) Observation of the liquid penetrant examinations performed on the above listed samples was accomplished by the inspector in order to: determine whether the applicable drawings, instructions or travelers clearly specify the test procedure to be used and whether a copy of the procedure was available in the work area; determine whether the sequencing and timing of the examination relative to other operations such as grinding, welding, or heat treating were specified and were in accordance with applicable code and specification requirements; determine whether the required equipment and materials were at the work station; determine whether the specific areas, locations, and extent of examination were clearly defined; penetrant type, penetrant application method, penetration time (dwell time), temperature of item surface, penetrant removal, item surface drying, developer application, developing time, and examined surfaces were cleaned at the conclusion of the examination in accordance with the applicable procedure requirements; and to determine whether any revealed indications were evaluated at the proper time in accordance with the procedure requirements and that correct acceptance criteria were used and the results were reported in the prescribed manner.
- (3) All of the observed examinations performed by PPP were on welds that had been previously liquid penetrant examined but had subsequently been prepared by grinding to accommodate future ultrasonic and liquid penetrant examinations during ISI activities. There were no indications noted which would require repair although some reportable indications were revealed and subsequently dispositioned in accordance with procedure requirements.
- (4) The examination of weld 031-W-116A by GPC, was being performed as a function of the ongoing GPC contractor surveillance program. This weld was examined by GPC but the procedure used for the examination was PPP Procedure IX-PT-1-W77. Examination results by GPC indicated the examined weld was acceptable in accordance with applicable acceptance/rejection criteria.

c. Records Review

- (1) The below listed liquid penetrant materials were used to perform the examinations listed above and certification records were reviewed to ascertain if the sulfur and halogen content of the materials were within acceptable content requirements.

<u>Material</u>	<u>Batch Nos.</u>
Liquid Penetrant	83D038, 84H027
Penetrant Remover	83M069, 84H057, 84C108
Developer	84C051, 84J005

- (2) In addition to the above, a black "Action Marker" identified as #55 Q 404 Lot #152 was used by PPP examiners to mark identification and date examined on the piping adjacent to the welds that had been liquid penetrant examined. Review of the black "Action Marker" material certification documentation relative to acceptability for use on stainless steel was accomplished by the inspector.
- (3) A review of qualification records, as listed below, for liquid penetrant examination personnel, was accomplished to determine whether the qualification records reflect the employer's name, person certified, activity qualified to perform, level of qualification, effective period of certification, signature of employer's designated representative, basis used for certification, annual visual acuity, color vision examination, and periodic recertification.

<u>Organization</u>	<u>No. Reviewed</u>
GPC	4
PPP	8
NISCO	4

- (4) During the certification review of GPC liquid penetrant examination personnel, the inspector noted that several personnel had taken the certification examinations months, and in one case one year, prior to the certification date being established. The records in question had a notation indicating that the examinations were administered prior to the time when the individual was eligible for certification due to insufficient time requirements at a lower certification level. Apparently, once the time requirements were met, at some date after the examinations were administered, the certification was consummated and the date of certification was established at the later date. This method of establishing certification dates results in the examinations for recertification of these individuals being beyond a three year interval. This is contrary to the generally accepted examination time interval established by applicable Code and specification requirements. This matter is being investigated by the licensee and, pending NRC review of the determination made, this matter will be identified as Unresolved Item 50-424, 425/84-36-06, Certification date for GPC NDE examiners.
- (5) The inspector reviewed the examination records for the above listed welds and components to determine compliance with procedure requirements for examination records.

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

12. Radiographic Examination Procedure Review/Work Observation/Record Review (57090)

a. Procedure Review

- (1) The below listed PPP and NISCO radiographic procedures were reviewed by the inspector to ascertain whether they had been issued and approved in accordance with the licensee's/contractor's QA program and to ascertain whether the examination variables were defined and whether these variables are controlled within the limits specified by the applicable Code or specification requirements.

<u>Procedure No.</u>	<u>Title</u>	<u>Latest Rev. Date</u>
PPP IX-RT-1-W77	Radiographic Procedure IR-192 Butt Welded Pipe Winter 1977 Addenda	06/28/84
NISCO E.S. No. 8.7	Radiographic Examination of Production Welds and Welder/Welding Operator Qualification	Rev. C 08/07/84

- (2) In addition to the review above, the procedures were analyzed in the area of technical content relative to:
- Material and weld surface condition requirements (irregularities, weld ripples, surface finish, etc.)
  - Types of material to be radiographed
  - Material thickness range
  - Type of radiation source, effective focal spot or effective source size, X-ray equipment voltage rating and equipment manufacturer, as applicable
  - Film brand or type and number of films in cassette
  - Minimum source to film distance
  - Blocking or masking technique, if used
  - Type and thickness of intensifying screens and filters
  - Exposure conditions for procedure qualification, if applicable
  - Radiographic film processing requirements

- Quality of radiographs - limits on mechanical, chemical, or other blemishes such as fogging, process marks, scratches, finger marks, loss of detail or false indications
- Film density limits for single and composite viewing
- Use of densitometers for assuring compliance with film density requirements
- System of radiograph identification
- Use of location markers
- Records for showing film and source location with reference to the part being radiographed
- Use of intensifying screens
- Methods of reducing of and testing for backscatter
- Description of or reference to the welding procedure
- Material type and thickness restrictions for isotope radiography
- Geometrical unsharpness limitations
- Selection and use of penetrameters including: penetrometer design, selection of essential hole, penetrometer thickness including special requirements for single and double wall viewing, penetrometer placement including special requirements for single and double wall viewing, number of penetrameters, and shims under penetrameters
- Radiographic technique requirements for double wall viewing
- Qualification of radiographic procedure (radiographs taken to demonstrate procedure capability)
- Requirements for evaluation and disposition of radiographs
- Records requirements

b. Work Observation

- (1) Radiographic examination being performed by PPP personnel on the welds listed below was observed by the inspector. The only radiography available for observation was being performed by PPP. NISCO had no examinations being accomplished during the time

available to the inspector for observation and GPC does not perform any radiography. GPC's activity in this area is limited to partial radiographic film surveillance of those licensee's contractors that do perform radiography.

<u>Weld Identification No.</u>	<u>Iso/Dwg. No.</u>	<u>Pipe Size</u>	<u>System/Class</u>
109-W-121	1K4-1204-109-02 R/2	3/4"	Safety Injection System Class II
486-W-149	1K4-1208-486-01	1"	Chemical and Volume Control Class II
006-W-19A	1K3-1204-006-01	24"	Safety Injection System Class II

- (2) Observation of the radiographic examinations performed on the above listed welds was performed to determine whether the applicable drawings, instructions, or travelers clearly specified the examination procedure to be used and that a copy of the procedure was available to the radiographer; identify for subsequent records review the personnel performing radiography or evaluating the examination results are qualified to perform the assigned task; determine whether the required equipment and materials, as specified in the examination procedure, are available at the work station; determine whether the specific areas, locations, and extent of examination are clearly defined; determine whether the examination attributes are as specified and consistent within the limits or ranges dictated by applicable controlling documents and specifications.
- (3) In addition to the above, the film processing and film identification, flashing process, was observed to determine whether the radiographic film was being processed in accordance with applicable procedure requirements and that the processed film was free of chemical and mechanical blemishes which could interfere with interpretation.

c. Records Review

- (1) The below listed radiographic film was reviewed to determine if radiographic quality was in accordance with the applicable procedure and Code requirements and to specifically verify the

following: penetrometer type, size, and placement; penetrometer sensitivity; film density and density variation; film identification; film quality; and weld coverage.

<u>Radiographed By</u>	<u>Weld ID No./ Iso No.</u>	<u>Film Reviewed</u>
NISCO	RVBMI Penetration 21 Weld 1	0°, 60°, 120°, GAP (a)
NISCO	RVBMI Penetration 31 Weld 1	0°, 60°, 120°, GAP (a)
NISCO	RVBMI Penetration 28 Weld 1	0°, 60°, 120°, GAP
NISCO	RVBMI Penetration 20 Weld 1	0°, 60°, 120°, GAP (a)
PPP	109-W-121/1K4-1204-109-02 R/2	A, B, C
PPP	486-W-149/1K4-1208-486-01	A, B, C
PPP	006-W-19A/1K3-1204-006-01	0-1, 1-2, 2-3, 3-4, 4-5, 5-0
PPP	218-W-04/1K4-1202-216-04	0-1, 1-2, 2-3, 3-0 (b)
PPP	241-W-02/1K4-1204-241-02	0-1, 1-2, 2-3, 3-0
PPP	243-W-124/1K4-1204-076-02	A, B, C, D (c)
PPP	119-W-01/1K1-1304-119-01	0-1, 1-2, 2-3, 3-0 (c)
PPP	118-W-07B/1K3-1305-118-01	0-1, 1-2, 2-3, 3-0 (c)
PPP	149-W-109/1K3-1204-149-01	0-1, 1-2, 2-3, 3-0 (c)

- (a) Film interpretation by NISCO personnel on penetration 21 weld 1 indicated rejection due to lack of gap. Penetrations 31 and 20 weld 1 were rejected due to lack of fusion at the weld to base metal at the bottom head adaptor. Repair work orders had not been issued at the time of this review. The inspector agreed with the disposition of the above recorded rejectable conditions.
- (b) This weld was being repaired as a result of visual examination findings on the ID surface which took place when an adjacent weld was being prepared for welding. The ID surface of the weld was ground and re-radiographed which resulted in the weld being rejected. Deficiency Report #6915 was issued as a result of weld repair order #1 issued on 11/4/84. The original radiographic film of this weld was reviewed by the inspector and the original weld determination made by PPP personnel appeared correct.
- (c) These welds were being reevaluated by GPC as a function of their ongoing contractor surveillance program. The inspector agreed with the findings of both PPP and GPC as they were in agreement.
- (2) The inspector reviewed the examination records for the above listed welds to determine compliance with procedure requirements for examination records and to determine if the disposition of the welds radiographed was in compliance with applicable Code and specification requirements.

- (3) A review of qualification records, as listed below, for radiographic examination personnel was accomplished to determine whether the qualification records reflect the employer's name, person certified, activity qualified to perform, level of qualification, effective period of certification, signature of employer's designated representatives, basis used for certification, annual visual acuity, color vision examination and periodic recertification.

<u>Organization</u>	<u>No. Reviewed</u>
GPC	2
PPP	6
NISCO	3

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

### 13. NDE Preservice Inspection

During this inspection period, some preservice examinations were being performed in Unit 1 by Sonic Systems for Southern Company Services (SCS), the ISI agent for GPC. The examinations were being accomplished in accordance with ASME Code, Section XI, 1980 Edition, Winter 1980 Addenda to establish baseline information which will be compared with ISI examination results sometime after Unit 1 commences operation. The inspector observed a limited amount of activity as documented below.

#### a. Review of Procedures (73052)

- (1) The inspector reviewed the ISI procedure indicated below to determine whether the procedure was consistent with regulatory requirements and licensee commitments. The procedure was also reviewed in the areas of procedure approval, requirements for qualification of NDE personnel, and compilation of required records.

<u>Procedure No.</u>	<u>Title</u>	<u>Revision</u>
SCS PT-V-605	Color Contrast, Solvent-Removable Liquid Penetrant Examination Procedure	0 -Dev. 1

- (2) In addition to the above review, the procedure was analyzed for technical content relative to: method consistent with ASME Code, specification of brand names of penetrant materials, specification of limits for sulfur and total halogens for materials, pre-examination surface preparation, minimum drying time following surface cleaning, penetrant application and penetration time, temperature requirements, solvent removal, method of surface drying, type of developer and method of application, examination technique, technique for evaluation, acceptance standards, and requalification requirements.

## b. Observation of Work and Work Activities (73753B)

- (1) The inspector observed liquid penetrant examination of two welded joints identified below to determine whether or not the examinations were performed per code requirements, and the licensee's written procedures.

<u>ISI Line No./ Exam Area Weld No.</u>	<u>Iso No.</u>	<u>Component</u>
11204-126-W05.0	ISI-11204-126/1	Valve to Pipe
11204-126-W10.0	ISI-11204-126/1	Pipe to Tee

- (2) The liquid penetrant examinations of the welds listed above were performed in accordance with procedural requirements while using the below listed Magnaflux penetrant materials.

<u>Material</u>	<u>Batch No.</u>
Liquid Penetrant	84E019
Penetrant Remover	84G040
Developer	84D005

- (3) Review of the above noted penetrant materials certification records indicated the materials had been tested for total sulfur and halogen content and were within acceptable content requirements.

## c. Data Review and Evaluation (73755)

- (1) Records for the completed liquid penetrant nondestructive examinations noted in paragraph 11.b.(1) above were reviewed to ascertain whether: the method(s), technique and extent of the examination complied with the applicable NDE procedure; findings were properly recorded and evaluated by qualified personnel; and personnel and NDE materials were designated and qualifications/certifications were on file.
- (2) Review of the liquid penetrant examination records indicated that each of the two welded joints had liquid penetrant indications. The inspector requested a copy of the final liquid penetrant acceptance examination performed on the two welds during the fabrication stage of construction. The final fabrication liquid penetrant examination records for the welds (which were performed by PPP) were delivered to the inspector and a comparison of the preservice and final fabrication examinations agreed within acceptance limits. Neither examination revealed rejectable indications. In addition to the liquid penetrant examination

review, the radiographic film inspection report was reviewed to determine if any of the liquid penetrant indications noted had been revealed by radiography. The radiography inspection did not indicate any rejectable indications or any indications which might have corresponded with the liquid penetrant examination findings.

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

#### 14. Interviews of Licensee and Contractor QC Personnel

##### a. Formal Interviews

A major part of this inspection involved formal interviews with QC inspectors involved in safety-related activities. The interviews were conducted in conference rooms away from the inspectors' normal work areas. The inspectors to be interviewed were selected from the lists of QC inspectors which were provided by the licensee at the start of the inspection.

A total of 62 inspectors were interviewed during the inspection, with interviews lasting from 20 minutes to an hour and a half, depending on the individual QC inspector. The QC inspectors were encouraged to candidly discuss their impressions of the strengths and weaknesses of the Vogtle Project through a series of discussion questions concerning procedures, working conditions, supervision/management, training, interactions with craft and engineering, specific and general perceptions of problems, comparison with other sites and perceptions about NRC.

The majority of the QC inspectors interviewed felt very positive about the Vogtle Project. Most of them felt that there had been a definite improvement during the past year and that, while there were still minor problems, things were improving.

Problems identified during the interviews were factored into the inspection activities during this inspection or were identified for followup during subsequent inspections. The identified problems are listed in paragraph 14.c of this report.

##### b. Field Interviews

The inspectors conducted approximately 80 informal field interviews with site craftsmen (ranging from laborers and helpers through journeymen and supervisors, QC Inspectors, and Field Engineers) in order to establish a sense for the level of quality of construction as expressed by the individuals actually performing the various site construction activities. The individuals were requested to express their personal opinions relative to quality of construction, site

management awareness of problems and subsequent resolution of those problems, and their personal opinions relative to the level of quality of construction as compared to other nuclear power plants that they may have worked at, if any. The majority of the individuals interviewed expressed the opinion that the construction activities at Vogtle were of a high quality and when the activities were compared with similar activities at other construction sites the individuals indicated that the construction activities at Vogtle were at least as good, and in most cases, superior to the construction quality at the other sites. Relative to management awareness, the various individuals indicated they felt that management was aware of the problems being encountered and that the problems were being resolved in a timely manner; especially in the last six to nine month period. During these informal interviews, the inspectors questioned the various individuals relative to their training, education, and qualification to perform the various tasks being accomplished. The inspector found the majority of craftsmen and craft foremen to be knowledgeable of the procedural requirements of the work being accomplished and that individuals involved in tasks requiring journeyman or foreman levels of qualification were generally very knowledgeable and skilled in the work being performed.

c. Concerns Expressed During Interviews

The following concerns were identified during interviews of QC inspectors, craft personnel, and field engineers.

(1) Buried Pipe Not Holiday Tested

This concern was expressed by one person who admitted that it was a hearsay concern and that he could not identify the piping in question nor the source of the concern. The NRC plans no action on this concern in that safety significance was not established.

(2) Possible Recrimination if Concern Reported to GPC or PPP Quality Concerns Programs

Most of the people were very positive in their attitude toward the Quality Concerns Programs. But as can be expected, there are a few people that are uncomfortable with any program involving real or perceived personal risk. There were no responders who admitted to firsthand knowledge of how the concerns program operated. NRC plans no special inspection in this area other than the routine monitoring of the GPC Concerns Program.

(3) Many Pipe Supports Unacceptable

This concern involved the welding problems associated with the pipe racks - see followup of licensee identified items in paragraph 16.

- (4) Process Sheets for Hangers are Difficult to Follow Because of Changes and Corrections/Hanger Packages Not Adequately Reviewed by QA Prior to Issue

This concern was expressed by several QC inspectors and craft personnel. The NRC programs for inspection of safety-related structures and pipe hangers and supports require review of the process instructions; therefore, this item will be reviewed in future routine inspections.

- (5) Weld Acceptance Criteria

A number of inspectors were concerned because inspection procedures specifically state that porosity is not cause for rejection of a weld. This concern is addressed in paragraph 3.c of this report, and is the subject of new Unresolved Item 424, 425/84-36-09.

- (6) Craft Requesting Instructions from QC Instead of Engineers When Questions Arise and Field Engineers Not Knowledgeable as They Should Be - Craft Turns to QC After Getting Wrong Information From Engineers

These concerns were expressed by a few inspectors and craft personnel. It appears that these are only the normal reservations which are present when people must interact to accomplish work. In that there were no specific engineers identified in the concern, followup of this item will be through the normal inspections by resident and regional-based inspectors.

- (7) Lack of Space for Inspection Tools and No Office Space

The PPP field inspectors were almost unanimous in expressing concern over the facilities provided for doing inspection-related paper work. This item is not considered an item for followup by NRC.

- (8) Traceability and Identification

A number of QC inspectors expressed concern about the generic traceability system in use for AISC/AWS D1.1 hanger materials. The system involves identifying acceptable material by color coding and, therefore, not maintaining heat number traceability to the point of installation. Traceability and material controls are inspected as a part of the routine NRC inspection program.

- (9) Interpretation of Weld Symbols

Some QC inspectors felt that Bechtel designers sometimes used non-standard weld symbols which required clarification. Without exception, the personnel that expressed this concern stated that

clarifications were obtained prior to work being accomplished or accepted. It appears that there is no safety problem, only a problem of convenience. The subject of weld symbols will be reviewed during routine welding inspections by NRC; therefore, no special followup is required for this item.

(10) Vague Procedure Requirements

This item was the subject of a number of concerns by QC inspectors. The subject is discussed in paragraphs 6 and 15.f of this report, and two new inspection findings are directly related to vague procedure requirements (50-424, 425/84-36-03 and 84-36-04).

(11) Changes to NCRs and DRs

The inspectors were almost unanimous in stating the DRs which are dispositioned "use as is" generally are justified by Engineering. Concerns in the processing of DRs and NCRs typically involved the changing of the meaning or the intent of the DR or NCR when it is rewritten by someone other than the originator. Other concerns involved the fact that it apparently takes less justification to void a DR than to accept the condition with a "use as is." This matter was explored in some depth during this inspection as described in paragraph 7 and is the subject of two new inspector followup items 50-424, 425/84-36-12 and 50-424, 425/84-36-13.

(12) Welding Across Beam Flanges

A few of the QC inspectors interviewed noted that there appeared to be no control of welding across beam flanges at Vogtle, whereas other sites had specific requirements concerning the practice. Followup of this concern is addressed in paragraph 5.b of this report.

(13) Documentation of Shim Plate and Filler Plate Welds

Some of the QC hanger inspectors were concerned that the procedure allowed the addition of shim plates and filler plates to a hanger without documenting them on the as-built hanger drawing. During inspections of hanger installations, the NRC inspectors noted that there were a significant number of hangers which contained shim plates or filler plates which were welded into place. In some of the configurations, it appeared that the shim plate welds could be loaded in shear or tension as well as compression. The inspectors identified this item for additional followup as Inspector Followup Item 50-424, 425/84-36-11, Documentation of welding involved with addition of filler plates and shim plates allowed by PPP procedure IX-50.

There were a number of other non-specific concerns expressed during the interviews that could not be tied to safety-related items or safety requirements. A number of them could be categorized as typical complaints (such as "there is a morale problem over pay differences"; "C-shift doesn't get as much support as A and B shifts") and others were specific complaints about the actions of specific people. In that these complaints were not tied to any specific safety-related materials and/or activities, NRC does not plan any additional follow-up inspections.

15. Previously Identified Inspector Followup Items

- a. (Closed) Inspector Followup Item 424, 425/84-05-02, Unsatisfactory Piping Welds from the Pullman Fabrication Shop. This item was reported to the NRC as a potential 10 CFR 50.55(e) item. Additional inspection in this area will be to examine the licensee's activity relative to the construction deficiency report.
- b. (Closed) Inspector Followup Item 424, 425/84-05-04, Licensee Review of Charges of Fraudulent Welding Inspection Verification. The licensee conducted a reinspection of a sample of work of each individual with no evidence of fraudulent sign-offs. This was reported to Region II in GPC letter No. GN-390 dated July 23, 1984. There were no indications of similar charges identified during the interviews conducted during this inspection.
- c. (Open) Inspector Followup Item 424, 425/84-05-05, Adequacy of Training Program for Inspectors, Field Engineers, and Craft. The subject of training was pursued during the interviews of QC inspectors during this inspection. The comments were generally favorable in that most inspectors felt that there was more training required at Vogtle than on any other job that they had worked. This item will remain open pending an NRC review of the training program requirements.
- d. (Closed) Inspector Followup Item 424, 425/84-05-06, Controls on Foreign Materials in Piping. GPC letter No. GN-390 dated July 23, 1984, described actions which have been taken in the areas of purge dam control and cleanliness inspections of piping internals. In that additional inspections in this area are a part of the routine construction inspection program by NRC, this item is closed.
- e. (Closed) Inspector Followup Item 424, 425/84-05-08, Control of Nonconforming Reports. This item was inspected in detail as described in paragraph 7 of this report. Two specific concerns remain which are: 1) controls on rewriting and changing of DRs; and 2) QA review of voided DRs. These concerns are new inspector followup items identified in this report; therefore, this item is closed.

- f. (Open) Inspector Followup Item 424, 425/84-05-09, Clarifications of Engineering and Procedural Requirements. This item continues to be a concern expressed by QC inspectors during interviews. The concern is real in some specific cases where procedures are incomplete and require QC inspectors to use resources other than the procedures in order to complete their work. An example of this is described in Violations 50-424, 425/84-36-03 and 84-36-04, opened in this report. This item will remain open pending additional inspection in this area.
- g. (Closed) Inspector Followup Item 424, 425/84-05-10, NF Boundary. The determination of what the correct boundary between ASME, NF requirements and AWS D1.1 requirements is a matter of concern to a large number of QC inspectors involved with hanger inspections. The concern is caused by the fact that the licensee has opted to fabricate combination hangers which are partially designed and fabricated to AISC and AWS D1.1 requirements and partially designed to ASME, NF requirements. The determination of where the boundary is to be is governed by the requirements of the design codes involved, and is not a matter of concern as long as the fabrication requirements match the design codes (i.e., AWS D1.1 requirements for AISC design and ASME NF fabrication requirements for NF designs). This item is closed.
- h. (Closed) Inspector Followup Item 424, 425/84-05-11, Welding Material Control is the subject of continuing routine inspections by resident and regional-based inspectors; therefore, a specific inspector followup item is no longer required for this topic.
- i. (Open) Inspector Followup Item 424, 425/84-05-12, Weld Symbols. The subject of unclear or confusing or non-standard welding symbols continues to be a concern expressed by QC inspectors and craft personnel. This item will be inspected in greater detail during reviews of training requirements.
- j. (Open) Inspector Followup Item 424, 425/84-05-13, Unqualified Welding Procedures. GPC letter No. GN-390 dated July 23, 1984, state that PPP has identified minor discrepancies in welding procedures but that PPP has not performed work at Plant Vogtle with unqualified procedures. This item will be inspected in detail in subsequent inspections.
- k. (Closed) Inspector Followup Item 424, 425/84-22-01, Revision of MT Procedure to Require Equipment Calibration. The licensee provided a copy of Pullman Power Products (PPP) Procedure IX-MT-1-W77, Magnetic Particle Procedures Dry Powder Continuous Prod Method Winter 1977 Addenda, with the latest revision dated 9/28/84. The latest revision to this procedure was issued to include requirements for calibration of magnetic particle equipment. The inspector reviewed the procedures and has no further questions regarding this matter.

1. (Closed) Inspector Followup Item 424, 425/84-22-02, Clarification of Field Storage Procedure Relative to Closure of Pipe Ends. The licensee provided a copy of PPP Procedure XIII-5, Field Storage Procedure the latest revision 9/24/84. The latest revision to this procedure was issued to clarify the requirements for capping pipe after it has been moved to the power-block buildings. The inspector reviewed the revisions made to the procedure and has no further questions regarding this matter.

16. Licensee Identified Items (92700)

Prior to the inspection, the licensee identified the following items under 10 CFR 50.55(e):

(Open) Item 424/CDR 84-66, "Containment Pipe Rack Welds". On July 20, 1984, the licensee notified Region II of a 50.55(e) item involving cracks in the Unit 1 containment pipe rack welds. The final report was submitted on October 17, 1984. The proposed corrective action plan (DER-061) was reviewed during a previous inspection and documented in Inspection report 50-424/84-30. Pertinent concerns identified during that inspection, and this inspection, not included in the final report submitted on October 17, 1984, are as follows:

- a. All cracked welds in racks R002 and R003 had not been identified.
- b. Potential high residual stress of the cracked "hidden weld" had not been identified.
- c. Deficient yield strength after possible stress relief of the E7018 electrodes involved had not been evaluated.
- d. Nondestructive examination of the "hidden welds" had not been anticipated.

The inspectors conducted additional discussions with cognizant licensee personnel on the above listed concerns and reviewed the phase 1 generic analysis of alternative correction methods attached to the 11/15/84 memorandum from R. Koogler to K. Caruso. The inspectors noted that the generic analysis infers that the option of removing and replacing the affected weld is the sole, realistically-viable, option of those included in the October 17, 1984 report; further, that the analyses had concluded with the recommendation of modification of the design of the connections involved.

The inspectors also reviewed the generic analysis for identification of welds with potential-for-cracking due to high residual stresses. The analyses has identified three generic areas of concern as follows:

- (1) Square plate welded all around with partial penetration welds
- (2) Field fabricated beam B0
- (3) Beams installed between fixed points

The inspectors noted that the above-listed item 1 addressed the cracked "hidden welds" and proposed corrections included both weld sequencing and modification of the weld design from partial penetration groove welds to fillet welds. The inspectors reviewed the summary of the follow-up analysis of all welds considered as suspect for beams installed between fixed points. This analysis had listed the B16 connections on R003 being acceptable without reinspection. The inspectors informed the licensee that rejectable indications has been found on the B16 to C10 connection on R003 during a spot-check NDE requested by the inspectors during the first day of this inspection. Cognizant licensee personnel were informed that this item would remain open pending further licensee response on the adequacy of corrective actions involved.

During observation of NDE examinations on pipe rack welds, the inspectors questioned the NDE examiners and welding QC inspectors as to their understanding of what constituted a final visual inspection. The question arises because NDE examinations such as Magnetic Particle, Liquid Penetrant, etc., are normally conducted after the final visual acceptance of a weldment; yet, the NDE procedures allow grinding of the welds to determine relevance of indications. Review of the procedures involved in the NDE work did not show any specific requirement that welding QC be informed whenever the final configuration of a weld is changed due to grinding at the request of the NDE examiner. In that the fabrication specifications require that visual inspections be conducted on final surfaces, the inspectors informed the licensee that this would be considered an Unresolved Item 50-424, 425/84-36-07, Reinspection by visual inspectors after grinding to explore indications discovered by NDE.