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

Report No.: 50-425/88-41

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

Docket No.: 50-425 License No.: CPPR-109

Facility Name: Vogtle 2

Inspection Conducted: July 18-25 and August 1-5, 1988

Inspectors: R. W. Wright 9/14/88
R. W. Wright Date Signed

For L. Dudley Low 9/16/88
L. R. Moore Dated Signed

Approved by: For R. W. Wright 9/14/88
G. A. Belisle, Chief Date Signed
Quality Programs Section
Operations Branch
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of verification of as-built construction conditions and licensee action on previous inspection findings.

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

REPORT DETAILS

1. Persons Contacted

Licensee Employees

J. Boddie, Document Control Supervisor
P. Brown, Unit 2 Control Room Drawing Clerk
*E. Groover, QA Site Manager - Construction
C. Harpole, Civil QC Inspector
*C. Hayes, Vogtle QA Manager
J. Menghi, Electrical Engineer
P. Patel, Stress Group Leader
*W. Ramsey, Project Engineering Manager
*D. Smith, Construction Engineer
*C. Wreath, Nuclear Operations Superintendent

Other licensee employees contacted during this inspection included craftsmen, engineers, various disciplined GPC and contractor QC inspection personnel, technicians, document control, and administrative personnel.

Other Organizations

Bechtel

D. Niehoff, Civil/Structural Engineering Supervisor
S. Thomas, Civil Engineering Building Group Supervisor
D. Strohman, Project QA Engineer
W. Uhouse, "N" Stamp Manager
J. Valdez, Quality Engineer

Pullman Power Products

J. Miller, QA Manager

Southern Company Services

*J. Bailey, Licensing Manager

Westinghouse - VSAMU

M. Beer, Technical Assistant
D. Shaw, Project QA Engineer

NRC Res nt Inspector

R. Schepens, Senior Resident Inspector - Construction

*Attended exit interview

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

2. Verification of As-Builts (37051)

This inspection was conducted to verify, by sampling, that current design and construction drawings and specifications correctly reflect the as-built plant conditions, that changes from the original design were properly reviewed and approved, and that the plant seismic and other stress calculations are based on as-built conditions. Supplemental review in this inspection area was conducted by other Region II based inspectors and the SRC as documented in NRC Inspection Report Nos. 50-425/86-02, 86-36, 87-45, 88-05, 88-10, 88-12, 88-13, 88-19, 88-27, 88-29, 88-30, and 88-38. They inspected various piping, electrical, and structural systems to assure that the Vogtle Unit 2 as-built facility is as described in the FSAR.

a. As-Built Program

PP&PM, Part B, Section 5, As-Built Program, describes the Vogtle Project program for developing as-built records.

There are two processes by which drawings achieve as-built status; the detailed dimensional process, which is utilized for pipe support and isometric drawings, and the more widely used FCR/DCN/DR process. During the latter process, drawings are periodically updated for changes during construction based on DCNs/FCRs/DRs and design evolutions.

Once construction has completed each system or structure they are turned over to Nuclear Operations. The construction turnover process includes applicable walkdowns of systems and structures as required by the Finalization (walkdown) Programs. The walkdowns are performed to check that systems and structures are complete. These installation configurations are also verified against the design drawings. Any construction work remaining is completed to the engineering design documents and any necessary changes are reconciled through the FCR/DCN/DR process as appropriate. Discussions with responsible personnel and examination of the August 2, 1988, Unit 2 Finalization Programs Status Report revealed that those activities, which were scheduled for completion in January 1989, were either on or ahead of planned schedules.

b. Governing Procedures

The following VEGP manuals and procedures were reviewed during this inspection to verify that the licensee had adequate controls over drawings and change requests and for assuring that seismic and other stress calculations were based on the as-built plant condition:

Plant Vogtle Field Procedure Manual

CD-T-16, R10, Structural Steel and Q-Decking
DC-A-01, R15, Drawing Control

DC-A-03, R16, Change Requests and Notices
ED-T-02, R13, Raceway Installation
ED-T-07, R13, Cable Installation
ED-T-08, R11, Cable Termination
GD-T-01, R15, Nonconformance Control
QC-T-05, 09, Visual Inspection

VEGP Nuclear Operations Procedure

00101-C, R5, Drawing Control
00103-C, R5, Document Distribution and Control
70408-C, R3, Controlled Document Distribution
91701-C, R1, Preparation and Control of Emergency Planning Documents

VEGP Project Policy and Procedure Manual, Part B

Section 5, As-Built Program
Addendum 2, As-Built Matrix

VEGP Project Reference Manual, Part C, Engineering

Section 4, Bechtel Drawings
Section 8, Specifications and Procurement
Section 9, Design Calculations
Section 26, Construction Specifications
Section 35, Change Control Packages

VEGP Project Reference Manual Appendix 2, Engineering Field Procedures

Section 17, Final Design Verification for Safety-Related Piping Systems

VEGP Finalization/As-Built Program Manual

FP-4, High Temperature Pipe/Electrical Recovery Separation
FP-5, Electrical Raceway and Cable
FP-6, Cable/Wiring Separation in Multi-Train Panels
FP-7, Final Design Verification for Safety Related Piping Systems
FP-9, Structural Integrated Verification and Evaluation

PPP Procedure Manual

X-24, R 8/6/87, As-Built Piping Systems and Related Components

The inspectors conducted discussions with personnel responsible for the design and final evaluation of the as-built condition for the Unit 2 ASME Class IE raceway and cable and for Seismic Category I structures. Based on these discussions and review of the above

control procedures, the inspector concluded the licensee has developed an adequate program to assure that current drawings reflect the as-built status of the plant.

Examination of the above procedures verified that administrative controls and responsibilities had been established to assure the following:

Interim basis design change documents were properly reviewed approved and safeguarded until they were incorporated in the drawing

Programs required users to employ the latest design document and applicable changes.

When design changes were incorporated in drawings, these drawings were issued and distributed in a timely manner.

(1) Piping Systems

Verification of piping system as-builts was accomplished by a piping fabrication isometric drawing field verification sample. The sample content was 12 latest revision isometric drawings encompassing 6 safety-related systems. The piping system portions reviewed were ASME Classes I, II, or III, Seismic Category I, and were located in the auxiliary and containment buildings. No deviations between the field installations and the current revision of the fabrication isometrics were identified.

The ASME Class I piping examined by the inspectors was located in the containment building. The greater majority of this piping had completed the licensee's as-built reconciliation process and was insulated. The ASME Class II and III safety related piping examined was located in the auxiliary building. Some ASME class II small bore piping which was examined was located in containment. The majority of this piping, approximately 90 percent, had also completed the licensee's as-built reconciliation program. Licensee verification activity for as-built conditions with design conditions was evident due to recent revisions to the isometrics and actual dimensional measurements incorporated into the drawings.

The inspectors reviewed piping system supports, welds, and piping to verify that the as-built drawings reflected the physical installation in the plant. The piping support locations, types, and configurations were examined for conformance to the piping support drawings referenced in the fabrication isometrics. Each piping system portion examined contained 10 to 20 pipe supports and the specific pipe support drawings provided locations, dimensions, and a configuration sketch for each support. All pipe supports identified on the

current revision isometrics were verified and each conformed to the applicable referenced pipe support drawing. Pipe welds were verified for location and identification. All welds indicated on the fabrication isometric were located and identified in the field. Piping was generally reviewed for configuration, size, component location and orientation, labeling, proper ASME Class designation, and type. Component configurations and dimensions in the field were as identified on the isometric drawings. The following piping system fabrication isometrics were utilized for this as-built verification inspection:

Drawing	Revision	System
2K4-1201-022-02	5	RCS
2K4-1201-023-02	5	RCS
2K3-1202-002-01	7	NSWS
2K3-1203-001-01	5	CCS
2K3-1203-011-01	4	CCS
2K3-1204-002-03	4	SIS
2K4-1204-024-03	9	SIS
2J4-1204-143-01	2	SIS
2K3-1208-316-01	3	CVCS
2K3-1208-316-02	4	CVCS
2K3-1302-020-01	8	AFWS
2K3-1302-029-01	5	AFWS

Based on the sample of this as-built review, it appeared that the licensee as-built reconciliation program has been effective in assuring as-built design and construction drawings correctly reflect the as-built plant condition.

(2) Electrical Cables

Electrical cable as-built review was accomplished by verifying cable routing for a sample of safety-related components. Each component selected was verified to the applicable wiring diagram or drawing from the motor control center to the component termination.

The verification included cable routing, identification, protection, isolation, and termination. No discrepancies between current drawing revisions or termination cards and the physical installation were identified by this review.

The following safety-related component's Class IE cable routings were verified:

2HV 8105
2HV 8116
2HV 8835
RHR Pump, motor train B.
SI Pump, motor train A.

The cables were traced from the component thru the junction boxes, where applicable, to the motor control centers via conduits and cable trays (raceways). The following layout drawings and wiring diagrams were utilized:

Drawing	Revision	Drawing	Revision
2X3DF454	12	2X3DCH107D	0
2X3DF42E	3	2X3DCAF17B	1
2X3DF444	11	2X3DCHH07N	1
2X3DF455	10	2X3DCHH07B	1
2X3DF456	7	2X3DCAF16C	1
		2X3DCAF16D	1

Cable terminations were as designated in the applicable drawings and termination cards. Cable trays and runs were as identified on layout drawings. Cables, trays and conduits were clearly labeled. The inspector verified that the cables contained in raceway 2AE454RL134 were as designated in the Cable and Conduit Routing List. The listed cables for this conduit were consistent with the cables which were actually installed. The sample of electrical cables examined indicated that as-built electrical drawings reflect actual installed conditions.

(3) Structures

FSAR, Section 3.8.3, Concrete and Steel Internal Structures of Concrete Containment, and Section 3.8.4, Other Category I Structures, describe applicable codes, standards and specifications for the design, materials, fabrication, construction, inspection, and testing of these structures.

The inspectors randomly selected the following listed internal structural steel assemblies located in Unit 2's containment, auxiliary, control, and diesel generator buildings for inspection. These structural steel assemblies were inspected to verify that their erection was accomplished in accordance with the latest approved applicable drawings. The subject assemblies were examined for proper member sizes, joint location, orientation, material type, bolting, and welding, to confirm that these structures were acceptable. Additionally, the NRC inspectors had the GPC QC inspector verify the acceptability of the existing torque (1475-FT-LBS required) on the 1 1/8 - inch diameter, A-490 high strength bolts located in containment beam connection No. 10.

Containment Building	-	Beam to Beam Connections Nos. 7, 10 Elevation 220, Loop 1

Containment Building	-	Drawings 2X2D48F209, R0 2X2D48F201, R2 2X2D48F215, R2
Auxiliary Building	-	Room RA-103, Steel Framing Connection Nos. 95, 97, 98, 99, 100, 101 Drawing AX2D08G025, R9, Detail B
Control Building	-	Room RB-05, Steel Framing Plan at Elevation 200, Connection Nos. 144, 145, 146, 147, 148, 149, 150, 151 Drawing AX2D11F007,RII
Diesel Generator Building	-	Stairwell Framing Drawing 2X2D07F001, R3 2X2D07G002, R1, Section C AX94V019, R34
	-	Fuel Oil Day Tank Structural Steel Support Drawing 2X2D07A001 2XD07A005, R2 C-FCRB-19908; C-FCRB-20147

No problems were identified with the Unit 2 structural steel as-built program. The inspector examined the STRIVE Unit 2 Final Report which was prepared in accordance with Finalization Program FP-9 requirements . This program provides a documented and verifiable record of the reconciliation of existing loads and structural configurations for selected potentially critical structural components existing in Unit 2's containment, auxiliary and control buildings. The limited number and minor nature of structural modifications necessary as a result of the study attest to the adequacy of existing design assumptions, design change controls, and conservatism exercised in the structural steel area.

c. Review of Design Changes

(1) In-process Changes

The inspector examined five plant changes (FCRs) CFCRB-23506, CFCRB-23510, CFCRB-23511, MFCRB-18759, and YFCRB-7164 that were in the review process. These FCRs were in various phases of engineering discipline review, had not yet received the Project Engineer's approval, nor had they been incorporated into as-built drawings. The reason for the subject change, its impact on the original design and other disciplines, the status of review and approval, and the potential need for drawing changes were discussed with the C/S Building Group Supervisor.

The inspector concluded that these FCRs were being properly processed in accordance with the licensee's procedures.

(2) As-Built Changes

The inspector compared 15 changes (DCNs and FCRs) to the fabrication isometrics (as-builts) to verify their incorporation into the drawings, input into the stress and seismic calculations, and review approval process. The field changes consisted primarily of configuration changes due to interferences and piping support deletions or additions. All changes reviewed provided adequate documentation of the review and approval process and incorporation into drawings and calculations.

Changes were initiated via FCRs or DCNs which were attached to drawings. These changes were eventually incorporated into drawings by subsequent drawing revisions. Stress calculations were accomplished via a computer program utilized by BPC which maintains an up-to-date piping system model. Programatic controls required all FCRs to be reviewed by the stress calculation organization for potential impact on stress calculations. The computer model was periodically updated with the drawing revision and these revisions received a more in-depth review for impact on stress and seismic calculations. Stress calculations for the as-built piping portions reviewed in the previous paragraph utilized the current applicable drawing revision which indicated that the as-built plant condition was used as an input to the system seismic analysis. Field changes, MFCRB-16455 and 16557 to drawing 2K4-1201-022-02, were reviewed to examine the process for incorporating field changes into stress calculations. These FCRs reduced the weld size and weld leg length on various 2-inch pipe welds and were incorporated in revision 4 of the drawing. This revision was transmitted to the Westinghouse Pittsburgh organization responsible for stress calculations by the Vogtle Lead Engineer, Reconciliation Group via transmittal BB-02-602. An acknowledgement letter from Westinghouse, Pittsburgh to the onsite Westinghouse group, V-SAMU, dated January 20, 1988, indicated that this revision had been incorporated into the applicable stress calculation.

The following changes were reviewed for physical field installation, drawing and document revisions, and adequacy of review process:

Drawing 2K3-1203-001-01
MFCRB-7234F, changed component cooling vent valve piping due to interference

Drawing 2J4-1204-143-01
MFCRB-8822P, coupling added to piping run to facilitate installation

DCN 3, added and deleted piping supports

Drawing 2K4-1201-022-02
MFCRB-6849F, changed piping configuration due to interference

MFCRB-18243 F, changed piping configuration due to interference

DCN 3, deleted a support

Drawing 2K3-1204-002-03
MFCRB-7131F, translated piping run due to interference

DCN 2, removed piping support

Drawing 2K3-1302-029-01
MFCRB 1796F, change in size of flow element

DCN 1 of revision 1, added elevation notation to drawing

DCN 3 of revision 4, deleted piping supports

Drawing 2K4-1204-024-03
DCN 8 of revision 8, deleted piping supports

DCN 7 of revision 7, corrected drawing discrepancy

MFCRB 7015F, changed spoolpiece configuration

Drawing 2K3-1203-011-01
MFCRB-7399F, changed piping configuration

No discrepancies were noted with respect to physical installation, document incorporation, review process, or stress calculation input for the completed as-built drawing changes reviewed during this inspection.

d. Operations Interface

PP&PM, Part B, Section 5, Addendum 2, The As-Built Matrix, describes the license's commitment for providing as-built documentation to satisfy the needs of site operations and maintenance personnel when

commercial operations are initiated. This operational commitment specifies the as-built drawing types that must be available and necessary to support routine operations and for abnormal and/or emergency operations. Nuclear Operations Procedure 00101-C, Drawing Control, specifies that the Document Control Supervisor is responsible for assuring that records (listed in Table 1 of Procedure 91701-C) which pertain to the as-built conditions of the plant are stored and filed at the site and are accessible to emergency response facilities under emergency conditions. Based on the current status of the Unit 2 Finalization Program it appears the licensee will complete the required as-built documentation prior to commercial operation.

3. Action on Previous Inspection Findings (92701) (92702)

(a) (Closed) VIO 425/88-28-01, Failure to Utilize Certified Field Level III Inspectors as Committed to by ANSI N45.2.6-1978.

The licensee's response dated July 19, 1988, was considered acceptable by Region II. The inspector examined the licensee's draft amendment to Section 1.9.58.2 of the FSAR (Exception No.5) which discusses the Unit 2 use of Level III Administrators and describes their responsibilities, functions, and minimum education requirements. This FSAR change currently carries change number (CN) GN-1474 and is scheduled to be incorporated in Amendment A-38 around October 7, 1988. The inspector concluded that the Unit 2 QC inspector program was now properly described in the FSAR, that the licensee had determined the full extent of the violation, taken action to correct the condition and prevent recurrence of similar problems. The corrective actions stated in the licensee's response are being implemented.

(b) (Closed) URI 425/88-34-01, Missing Project Engineering Organization Training Documentation.

The NRC inspector examined the actions Engineering has taken to date and plans to take in the future to resolve CAR-VS-88-231 resulting from BPC QA audit No VS-1-88. Discussion, with the QE and examination of records verified that the missing training records for the nine personnel identified in the subject CAR, and by the NRC inspector, have either been retrieved from other sources, the personnel have been retrained, or are scheduled for retraining. Engineering has committed to perform a 100 percent training record review for all current, permanently assigned engineering personnel. Additionally, they have developed a computerized tracking system to be applied to each permanently assigned person in engineering to assure that required training is provided and maintained.

4. Exit Interview

The inspection scope and results were summarized on August 5, 1988, with those persons indicated in paragraph 1. The inspectors described the areas inspected and discussed in detail the inspection results listed below.

Proprietary information is not contained in this report. Dissenting comments were not received from this licensee.

Licensee management was informed that the one VIO and one URI discussed in paragraph 3 were considered closed.

5. Acronyms and Initialing

AFWS - Auxiliary Feedwater System
ANSI - American National Standards Institute
ASME - American Society of Mechanical Engineers
BPC - Bechtel Power Corporation
CAR - Corrective Action Request
CCS - Component Cooling System
CVSS - Chemical and Volume Control System
DCN - Design Change Notice
DR - Deviation Report
GPC - Georgia Power Company
FCR - Field Change Request
FSAR - Field Safety Analysis Report
NRC - Nuclear Regulatory Commission
NSWS - Nuclear Service Water System
PPP - Pullman Power Products
PP&PM - Project Policy and Procedures Manual
QA - Quality Assurance
QC - Quality Control
QE - Quality Engineer
RCS - Reactor Coolant System
RHR - Residual Heat Removal (system)
SIS - Safety Injection System
SRC - Senior Resident Inspector - Construction
STRIVE - Structural Integrated Verification and Evaluation
URI - Unresolved Item
VEGP - Vogtle Electric Generating Plant
VIO - Violation
W -VSAMU - Westinghouse - Vogtle Structural Analysis Mobile Unit