



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

Report Nos.: 50-424/86-123 and 50-425/86-58

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: November 17-21, 1986

Inspector: J. R. Harris 12-16-86  
Date Signed

Approved by: T. Conlon 12-16-86  
Date Signed  
T. Conlon, Chief  
Plant Systems Section  
Engineering Branch  
Division of Reactor Safety

SUMMARY

Scope: This routine, unannounced inspection was conducted in the areas of structural concrete and backfill, post tensioning, and previously identified Unresolved Items and Inspector Followup Items.

Results: No violations or deviations were identified.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*R. E. Conway, Senior Vice President
- \*P. D. Rice, Vice President, Engineering
- \*R. H. Pinson, Vice President, Construction
- \*C. W. Hayes, Quality Assurance (QA) Manager
- \*E. D. Groover, Site QA Manager
- \*G. A. McCarley, Project Compliance Coordinator
- \*B. C. Harbin, Manager, Quality Control (QC)
- \*N. Lankford, QC Supervisor

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

#### Other Organizations

J. Bond, VSL Foreman, Post Tensioning Operations  
D. Summers, VSL QC Inspector, Post Tensioning

#### NRC Resident Inspectors

- \*J. Rogge
- \*H. Livermore

\*Attended exit interview

### 2. Exit Interview

The inspection scope and findings were summarized on November 21, 1986, with those persons indicated in paragraph 1 above. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

### 3. Licensee Action on Previous Enforcement Matters

(Closed) Unresolved Item 85-19-03, Maximum Allowable Water on Batch Tickets. Review of batch tickets for eight concrete pours placed between January 29 and February 27, 1981 showed that these tickets had a maximum allowable water content of 380 gallons for each 10 cubic yards of concrete batched. This quantity of water if used would exceed the maximum allowable amount of water allowed by the design mix.

Investigation of this matter by the licensee showed that the batch plant operator had keyed an artificial amount into the computer greater than allowed by mix design to allow him to work to the allowable one percent tolerance. A review of records for concrete pours made from September 13, 1980 to May 6, 1981 was performed to verify the maximum water was not exceeded. Review of these records showed no evidence that the maximum allowable water was exceeded. Review of concrete pour records during this inspection and during previous inspections by NRC inspectors showed no evidence that the maximum allowable water was exceeded. Review of these records showed that the batch plant operator did not approve the batch tickets. These were reviewed and approved by a QC inspector. This item is closed.

(Closed) Unresolved Item 85-19-01, Review of Results of Testing Performed on Concrete Materials by the Independent Testing Laboratory. Review of these records by NRC inspectors showed several discrepancies in the test data.

In followup on this item, the licensee reviewed all Law Engineering Testing Company test reports. The review was performed to verify the accuracy of results accepted. As a result of this review, 26 reports were found to contain some type of discrepancy. Deviation reports were written to address these discrepancies. Review of these deviation reports by the inspector showed that the identified discrepancies were of minor significance and that these discrepancies were properly resolved. This item is closed.

(Closed) Unresolved Item 85-19-02, Review of Civil Open Item Reports. The NRC inspectors could not determine from review of the Civil Open Item Reports whether or not the corrective actions had been completed, and whether or not the reports had been reviewed and accepted by engineering.

In followup on this item, the licensee reviewed all Civil Open Item Reports in the vault. A total of 43 Civil Open Item Reports were found. Of these 43 reports, closing reports could not be found for 26 of them. Closing reports were generated for two of these reports based on a review of other documentation in the vault which documented the corrective action taken. Deviation Reports were generated to address the remaining open reports. Review of these Deviation Reports by the NRC inspector showed that proper corrective actions were taken to resolve the open items and that these items were reviewed by engineering. This item is closed.

(Closed) Unresolved Item 85-19-04, Certification of QC Inspectors on Concrete Pour A-11B-004. Review of certification records of concrete QC inspectors showed that a Level I fresh concrete tester, who had his card revoked, conducted inprocess testing of fresh concrete and that a Level I inspector was evaluating and verifying acceptability of concrete batch tickets.



Investigation of this item showed that the Level I QC inspectors, whose card had been revoked, did initial batch plant tickets and sign the bottom of the pour log. However, these records were also signed or initialed by a certified inspector. Review of records of the Level I inspector, who was evaluating batch tickets, showed that his duties were to check the concrete batch print out ticket against a predetermined mix design. In case of a problem, a Level II batch plant inspector was available for advice or guidance. A review of batch tickets inspected by the Level I QC inspector showed that the batched mixes met design requirements. Review of ANSI N45.2.9-1978, showed that on the job participation should be included in the training program for QC inspectors and that when inspections require implementation by a team or group, personnel not meeting the requirement of this standard may be used in data taking assignments provided they are supervised or overseen by a qualified individual participating in the inspection. This item is closed.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Independent Inspection Effort (92706)

Construction Progress

The inspector conducted a general inspection of controls for the soils and concrete testing laboratory and observed ongoing backfill operations.

6. Containment (Post-Tensioning) - Review of Quality Records (47065) - Unit 1

The inspector examined quality records relating to post-tensioning activities for the Unit 1 containment. Records examined included tendon grease reports, receipt inspection records, and installation records for the following vertical and horizontal tendons:

Vertical Tendons

Tendon 3-109  
Tendon 4-108

Tendon 3-107  
Tendon 6-106

Horizontal Tendons

Tendon 55  
Tendon 56  
Tendon 57  
Tendon 58

Tendon 59  
Tendon 60  
Tendon 61  
Tendon 62

Examination of records for the above tendons showed that the tendons were installed in accordance with applicable specifications and drawings and that the installations were witnessed and documented by QC inspectors.

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

## 7. Containment (Post Tensioning) Observation of Work (47063) - Unit 2

The inspector observed stressing of vertical tendons in the Unit 2 tendon gallery. Tendons installed and witnessed by the inspector were Tendons 7-105, 1-110, 54-132, 56-130 and 62-124. During the installation of these tendons, the inspector was witness to installation problems on three of the tendons. These were Tendon Numbers 7-105, 54-132 and 62-124. During the installation of Tendon Number 7-105, numerous wires broke behind the anchor head at the number seven end. These wires broke while pressurizing to remove the shim stack. Deviation Report Number VF-0117 was written to address the problem. The licensee intends to remove this tendon and replace it with another tendon which is currently on order. During the stressing of Tendon Numbers 54-132 and 62-124, three strands (seven wires per strand) failed on Tendon 54-132 and two strands failed on Tendon 62-124. Specification X2A F04, Rev. 3, Containment Post-Tensioning System allows only one strand failure per Tendon. Deviation Reports were written to address these failures and tendon operations were stopped until the cause of these problems could be resolved.

Within the areas examined, no violations were identified.

## 8. Inspector Followup Items (IFI)

(Closed) IFI 83-11-03, Use of Deleted Steel. Deleted Steel is surplus steel resulting from modifications and design changes. Since the steel was originally received and inspected under the QA program, its reuse is permitted in safety-related areas. Requisition of this steel for use is coordinated by the miscellaneous steel coordinator. Modifications and inspections prior to use are made in the miscellaneous steel fabrication shop.

Investigations by the inspectors disclosed two instances where deleted steel beams were taken from storage areas and modified for use without coordinating their use with the yard coordinator, and without being inspected at the miscellaneous steel fabrication shop. These were identified by the licensee on Deviation Report CD-3288 and Corrective Action Request (CAR) Number C-107. In one instance, the modification was stopped before installation and, in the other instance, a modified beam was installed. The beam was removed and replaced by a beam modified and inspected in the fabrication shop. To prevent further occurrences of misuse of deleted steel, the licensee held a meeting with responsible engineers and modified procedure CD-708, Field Fabrication Miscellaneous Steel. A further investigation of this item regarding the use of deleted steel by the licensee included:

- ° Review of FCRs/DCNs written against all "F" (structural and miscellaneous) steel drawings for Level A and Level I in the Auxiliary Building and Level II and Level III in the Control Building.
- ° Selected FCRs/DCNs that would have been good vehicles for field fabricated "deleted beams".

- ° Determined if miscellaneous steel fabrication forms had been generated for selected FCRs/DCNs.
- ° Compared Civil QC inspection packages with selected FCRs/DCNs.
- ° Verified field conditions of beams.

Results of this investigation showed that controls for deleted steel were done in accordance with procedure CD-T-08. This item is closed.

(Closed) IFI 84-09-02, Effect of Moisture Variation Between Placed Fill and Laboratory Optimum. Review of records showed that the average optimum moisture method being used to control the backfill moisture sometimes allows the placed backfill moisture to vary from minus nine percent to plus five percent of the laboratory optimum moisture.

In evaluating this item, the licensee collected samples of the various backfill materials from the borrow area and had density tests made on the materials in their site test laboratory and an independent laboratory operated by Law Engineering Test Company. Results of these test showed that the density of the materials were not very sensitive to moisture change. In addition to these tests, the licensee performed inplace density tests on the backfill to verify that the density of the backfill met design requirements. Results of these tests showed that the backfill meets design requirements. This item is closed.

(Closed) IFI 85-28-01, Purchase of Superplasticizer as Non Q Material. Module 1, Reinforced Concrete Structures, indicates that superplasticizing agents (water reducing admixture used in concrete) are considered non-Q. Review of this item showed that the superplasticizer Melement used in the concrete was purchased as Non Q material. However, examination of receipt documents did show that the material does meet specification requirements for concrete as specified by ASTM C-494. A change order was made to Specification X2AP01 to require the material to be purchased as a Q item. This item is closed.

(Closed) IFI 85-28-03, Timeliness of Writing and Addressing a Deficiency Report on Cadweld Failures. Review of Deficiency Report Number DR CD-2276 showed that this deficiency was written in July 1982 to address four Cadweld tensile test failures that had taken place in June and September of 1981. Review of records did show that a stop work order was issued in September 1981 to address two of the failures and that additional testing was done. However, DR CD-2276 did not address the lack of timeliness in issuing a DR for these four tensile test failures.

Review of this item by the licensee indicated the failure to report the failing Cadwelds was a procedural violation. As a result, Deviation Report CD-07849 was written to address this deficiency. As a result of this deficiency, the licensee reviewed all tensile test evaluation reports from the beginning of the cadweld testing program from November 1, 1977 to



February 25, 1985. This review revealed a failure rate of less than one half of one percent. This extremely low rate of occurrence of cadweld test failures provides assurance that the cadweld splices made on the in-place reinforcing bars in the structures will achieve the load carrying capability of the bars. Thus, even though there was a minor procedure violation, no evidence of any impact on hardware was identified. This item is closed.

(Closed) IFI 85-28-02, Retrievability of Records. Review of records identified several examples of problems with missing and misfiled records due to the filing system and lack of retrievability. Examples of this problem included the finding of the LA abrasion tests for aggregates and cadweld inspection records by NRC inspectors that were reported missing by licensee reviewers. These are further examples of a problem concerning the filing and retrievability of records which were identified by the licensee in section 6.2 of Module 1, Reinforced Concrete Structures.

In followup on this item, the licensee established a task force to review the documentation filing system to establish an efficient filing system for specific types of records and to decide what records are required so that adequacy of records can be verified prior to turnover. Review of results of this task force identified several deficiencies which were listed on a matrix with action items for resolution. Review of resolution of these deficiencies by the inspector indicated that proper actions were taken to improve the filing and retrievability system for records. This item is closed.