



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

Report Nos.: 50-424/85-04 and 50-425/85-04

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: January 29 - February 1, and February 11-14, 1985

Inspector: W. H. Miller for 3-6-85
 J. R. Harris Date Signed

Approved by: W. H. Miller for 3-6-85
 T. E. Conlon, Section Chief Date Signed
 Engineering Branch
 Division of Reactor Safety

SUMMARY

Scope: This special unannounced inspection entailed 61 inspector-hours on site in the areas of licensee presentation on status of readiness review program, ongoing repair to a concrete defect and employee concerns in civil construction.

Results: No violations or deviations were identified.

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REPORT DETAILS

1. Persons Contacted

Licensee Employees

- **H. H. Gregory, General Manager Construction Department
- **E. D. Groover, QA Site Manager
- **B. C. Harbin, Manager Quality Control
- *N. Brooks, Civil Engineering Manager
- ***W. T. Nickerson, Deputy Project Manager
- **N. Lankford, Civil QC Supervisor
- ***S. D. Haltom, QA Engineer Support Supervisor
- D. Ennis, Assistant Civil Engineer Manager
- H. Williams, Construction Fire Protection Safety Supervisor
- R. Snell, Assistant Area Manager Control Building
- T. Rushing, QC Supervisor
- B. Watson, Senior QC Inspector

Other licensee employees contacted included six construction craftsmen, and 12 technicians.

NRC Resident Inspectors

- *W. Sanders
- ***R. J. Schepens

- *Attended exit interview February 1, 1985
- **Attended exit interview February 1 and 14, 1985
- ***Attended exit interview February 14, 1985

2. Exit Interview

The inspection scope and findings were summarized on February 1 and February 14, 1985, with those persons indicated in paragraph 1 above.

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

Not inspected.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Independent Inspection

The inspector attended a presentation by the licensee on a draft of the reinforced concrete module for the readiness review program and inspected ongoing repairs to a concrete defect in the Unit 1 containment building.

The readiness review program is a systematic and disciplined review being conducted by the licensee of their implementation of design, construction, and operational process to increase the level of assurance that plant Vogtle's quality programs have been accomplished in accordance with regulatory requirements.

The defect examined by the inspector is a honeycomb void in the exterior shell wall of the Unit 1 containment building. The void is adjacent to the number two buttress at the 316' elevation. The problem was identified by the licensee in deviation report number CD-07117. The licensee is currently chipping the concrete to define the extent of the void and preparing the surface for repairs.

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

6. Employee Concerns, Discussions and Findings

The following employee concerns were reviewed:

a. Vertical Construction Joint in Radwaste Building

(1) Concern

A vertical construction joint in a slab resting on top of a wall in the radwaste building was not properly prepared. It was felt that the joint was approved by the lead QC inspector because his supervisor told him to sign off the pour.

(2) Discussion

The inspector examined the concrete and records for the concerned placement which was made in pour number A-652-004 on July 22, 1984. The inspector also interviewed four QC inspectors involved in the pour. Discussions with responsible QC inspectors and examination of documents showed that the area of concern was a vertical joint connecting adjacent slabs that were placed separately. Review of the drawing also showed that the slabs were tied together across the joint by an upper and lower mat of reinforcing steel.

The joint in question used wire mesh as a forming material which was removed prior to placing of the adjacent slab. Discussions with three QC inspectors indicated that they did not feel the construction joint was properly cleaned of loose material (laitance). They indicated they did not feel the material would

cause a problem with the quality of the joint but felt a better job could have been done in cleaning the joint. Discussions with the lead QC inspector responsible for the placement and sign off for the construction joint indicated that he felt the construction joint was adequately prepared. He stated he did not feel his supervisor pressured him to sign off the construction joint. Examination of the construction joint in the finished slab by this inspector showed no evidence of any problem of bonding between the interconnected slabs.

This concern was also identified to management through the licensee's quality concern program which allows employees to bring their concerns to the attention of management. Review of the quality concern documentation package on this item showed that management had reviewed the concern and discussed the concern with responsible QC, craft and engineering personnel. Review of the package indicated that all of the QC inspectors except one was satisfied with the results of management's review of this concern which indicated that there was no problem with the quality of the construction joint.

(3) Findings

Discussions with responsible inspectors and review of documentation indicated that there was a difference of opinion among QC inspectors regarding proper cleaning of the construction joint. The lead QC inspector responsible for the sign off regarding acceptance of the construction joint stated the joint was acceptable and he would not have signed it as acceptable if there were any problems with the construction joint. The lead QC inspector's supervisor inspected the construction joint and indicated that the construction joint was acceptable. All QC inspectors except one indicated that they didn't think there was a problem with the quality of the construction joint. Visual examination of the construction joint where the slabs tie together showed no evidence of inadequate bonding.

b. Floor Slab Construction Joint in Radwaste Building

(1) Concern

Nine places on a construction joint for a floor slab in the radwaste building were not properly prepared.

(2) Discussion

The inspector examined records and visually inspected the concrete of the floor slab placement which was made in concrete pour number A652-002 on September 9, 1984. The inspector also interviewed six QC personnel that were involved in the radwaste floor slab pour. Discussions with responsible personnel and examination of records

showed that the area of concern was the horizontal construction joints at the top of walls that tied in with the overlying floor slab. Discussions with seven QC personnel involved in this placement indicated that they had no problem with the final preparation of the construction joint. Several of the QC inspectors stated that another individual involved in the inspection of the placement stated that he didn't want to work overtime and that he would find something wrong to prevent the placement of this concrete pour.

Investigations by the inspector also showed that this item of concern was identified to the licensee's quality concern program. Examination of the documentation package on this concern showed that management had investigated the concern and discussed the concern with responsible personnel. Examination of the documentation showed that all the QC inspectors except one was satisfied with the preparation of the construction joint and management's review of this concern. No problems with preparation of the construction joint were substantiated.

(3) Findings

Discussions with the responsible inspector and examination of records showed that all personnel except one were satisfied with the preparation of the construction joint. Discussions with responsible personnel and examination of records indicated that one individual had stated that he would find something wrong with the placement so that he would not have to work overtime. No problems with the quality of the construction joint were substantiated.

c. Hairline Cracks in Intake Structure Pipes

(1) Concern

The concrete pipe portion of the intake structure had hairline cracks which were chiseled out for repairs. The workers used 10 to 12 pound chipping machines to remove the cracks. These machines created excessive vibration which may have resulted in additional damage to the pipe.

(2) Discussion

The concrete pipes of concern are twelve foot diameter steel pipes lined with concrete that extend from the turbine building to the cooling towers. There are two pipes for each unit, one a hot leg and one a cold leg. They provide cooling water for the turbine condenser and hence are not safety-related. The inspector visually examined the cold leg and hot leg section of Units 1 and 2. Examination of the pipes and discussions with responsible engineers disclosed that some problems were encountered with the

use of large hammers in chipping and repairing of cracks in the Unit 1 cold leg. These were identified and documented by the licensee. Smaller chipping hammers were used to repair cracks in the remaining portions of the Unit 1 cold leg and ongoing repairs to the Unit 1 hot leg and Unit 2 cold and hot legs. Visual inspection of ongoing and completed repairs showed that repairs are being made in accordance with specification X2AP01, Section C11.1.

(3) Findings

Some problems were encountered with damage to the concrete on circulating water pipes running from the cooling towers to the turbine condensers through the use of large chipping hammers. These were identified by the licensee and use of the large chipping hammers was discontinued. Visual inspection of repairs by the inspector showed that repairs are being made in accordance with specification requirements. These circulating water pipes are not part of any safety-related system.

d. Concrete Poured Prior to Trash Removal

(1) Concern

Concrete was poured prior to removal of all trash in the following three areas:

- (a) Around the reactor where neutron detectors are located
- (b) Embed area of the reactor where number 18 rebar came out of the reactor cavity and tied into the shield wall
- (c) Blockouts for the placement of equipment such as HVAC Units on Level 3 of the control building.

(2) Discussion

The inspector visually inspected the concrete in the area of the neutron detectors, reactor cavity and slab walls and blockouts on level 3 in the control building. The inspector also examined concrete pour records for concrete placements in these areas and interviewed QC inspectors involved in the inspection of these concrete placements. Visual inspection of the concrete showed no defects such as voids, honeycomb or soft spots which could result from trash being left in the placements.

Examination of concrete pour cards showed that the areas had been checked for cleanout before placement. Interviews with QC inspectors involved in inspection of the placements prior to placement of the concrete disclosed that some problems were encountered with trash in placements during their reinspection.

However, they stated they brought these problems to the attention of the responsible craft and ensured that the placements were properly cleaned before final sign-off of the pour card as ready for placement. One inspector indicated that one time he had approved the clean-out of a pour for placement, that was later found to have some trash on the construction joint. He stated that another inspector responsible for inspecting the placement noticed the debris and held up the placement until the trash was removed. All of the QC inspectors stated that no pressure was put on them to accept a placement that was not properly cleaned.

(3) Findings

Visual examination of the concrete in the areas of concern disclosed no defects that could be attributed to trash left in the placement. Examination of pertinent records showed that the placements were inspected and approved for cleanout before placement. Discussions with responsible QC inspectors indicated that some trash was left in the placement area during preplacement preparation. However, they stated that they made several inspections to ensure the area was properly cleaned before approving the concrete pour for placement. One QC inspector stated he had missed some trash in a concrete pour that was later identified and taken care of by another QC inspector.

No problems with trash being left in concrete placements was substantiated during investigation of this concern.

e. Voids in Containment Wall

(1) Concern

The containment shell wall may contain voids. A Georgia Power employee was observed pounding on the containment shell wall. In some places the wall sounded different, as if there was no concrete against the metal liner.

(2) Discussion

Discussion with responsible engineers and review of licensee records showed that this problem was first documented by the licensee and reported to the NRC in May of 1980. The item was identified as a result of workers tapping on the steel liner and hearing an apparent hollow sound. In following up on the concern the licensee drilled holes through the steel liner in the area of the hollow sound. Results of the drilling showed a separation of approximately .01 inches between the concrete and steel liner. This hairline separation is attributed to shrinkage of the concrete and difference in the thermal coefficient of expansion for concrete and steel.

(3) Findings

Pounding on the steel liner in some areas does give a different sound as if the concrete liner is not against the metal liner. This was identified and documented by the licensee and reported to the NRC in May 1980. Test holes drilled in the liner in the area of an apparent hollow sound showed a hairline separation between the steel liner and concrete. The hairline separation does not affect the function of the structure.

f. Expansion Joint Between Control and Fuel Handling Buildings

(1) Concern

A five inch gap between the control building and the fuel handling building was filled with ether foam for an expansion joint. Later it was determined that the ether foam was supposed to have been removed. In March 1983, work began to remove the foam, but it was very difficult to do. Later it was observed that the walls were charred. Apparently, someone had set the foam afire in an attempt to burn it out.

(2) Discussion

The ether foam used to fill the seismic gap during construction serves as a form and a spacer for maintaining the proper seismic gap during construction of the walls. After completion of construction of the walls, the ether foam is removed. Discussions with the craft foreman and responsible engineers involved in removal of the ether foam disclosed that there was some difficulty in removing the ether foam. They stated that core drills were used in some cases to drill out the foam where concrete had come in contact with the ether foam. They stated that no attempt had been made to remove the ether foam by burning. The fire protection safety supervisor stated that he had been involved in investigation of numerous fires at the site but had no knowledge of any fire involving burning of ether foam in the seismic gap of any building. Visual inspection of the seismic gap area by the inspector showed no evidence of burning.

(3) Findings

Discussions with responsible personnel disclosed that ether foam was used during construction to maintain the seismic gap between the control and fuel handling building and that it was removed with difficulty. Visual inspection of the seismic gap area and discussion with personnel involved in removal of the ether foam disclosed no evidence of any attempt to remove the ether foam by burning. The fire protection safety supervisor had no knowledge of any attempt to remove the ether foam by burning.

Investigation of this item did not substantiate any attempt to remove the ether foam in the seismic gap by burning or any damage to the concrete.

g. Fire Damage to Containment Building

(1) Concern

In May 1983, a fire occurred next to the north face of the containment building near the penetration area. Some bundles of lumber which were used for building scaffolding caught fire from welding. The concrete on the side of the containment building got very hot and pieces of concrete approximately two inches in diameter flaked off.

(2) Discussion

Discussions with the fire protection safety supervisor disclosed that a fire around an electrical penetration in the Unit 1 control building was reported on March 13, 1984. The fire occurred on the "A" level of the control building around an electrical penetration extending from the north side of the Unit 1 containment building into the control building. The cause of the fire was attributed to sparks from welding operations causing a plywood cover over the penetration to ignite. The fire was investigated, photographed and documented by the fire protection safety supervisor. Examination of the photographs by the inspector showed no evidence of damage to the concrete. The inspector also visually inspected all penetrations on the north side of the Unit 1 and Unit 2 containment buildings. Visual examination of these penetrations showed no evidence of any damage to the concrete.

(3) Findings

Discussions with the fire protection safety supervisor and examination of records disclosed that a fire did occur at an electrical penetration extending from the north side of the Unit 1 containment building into the control building. Examination of photographs and visual examination of concrete adjacent to all penetrations on the north side of the Unit 1 and Unit 2 containment buildings showed no evidence of any damage to the concrete adjacent to these penetrations.

h. Control Building Backfill

(1) Concern

There was a pipe in the control building from which water runs continuously. It was rumored that there was an underground spring at the plant site and it had caused problems with backfill sinking when the construction began. It was not known whether the water

from the control building was associated with the underground spring.

(2) Discussion

The inspector walked down all leads of the Unit 1 and Unit 2 side of the control building and the electrical tunnel between the control building and turbine building. The inspector also examined drawings for the equipment drain system in the electrical tunnel and control building. Examination of the north side of the control building showed a pipe area in the Unit 1 side which had been leaking water and on the Unit 2 side a pipe area that was still leaking water.

These pipes extend from a floor drain in the electrical tunnel through the A level wall of the control building where they tie into the equipment drain system. These pipes are not part of any safety system. Examination of the pipes showed that water is or has leaked through the pipe sleeves that serve as a penetration for the drain pipes extending from the electrical tunnel floor drains. The penetration in the Unit 1 side has been sealed and leakage has stopped. Water is still leaking through the penetration on the Unit 2 side. Discussions with responsible engineers and examination of drawings indicate that the leakage is due to water entering the temporary backfill overlying the electrical tunnel. This backfill prior to completion of construction is scheduled to be removed, a seal placed over the top of the tunnel and then covered with permanent compacted fill.

This inspector has performed numerous inspection of ongoing backfill operations during construction. These inspections disclosed no problems with sinking backfill. Some problems did occur in November 1979, when heavy rains caused severe erosion and saturation of the backfill. This was reported by the licensee to the NRC and several meetings were held with the NRC in Atlanta and Washington, DC, regarding correction of erosion damage to the backfill. Some of the backfill was removed and tests were made on portions of the backfill to verify acceptability of the fill and a supplemental dewatering system was installed so that construction operation could continue. Also, a groundwater and settlement monitoring program was put in operation to monitor groundwater and settlement.

(3) Findings

Water is leaking around a penetration for a pipe in the Unit 2 side of the control building. This is apparently due to water entering the temporary fill over the electrical tunnel and

following along the pipe to where it penetrates the wall of the Unit 2 side of the control building. When the temporary fill is removed, a seal placed over the roof of the tunnel and replaced with compacted permanent backfill, it is expected that the leakage will stop. The leakage is not from any safety-related system. No evidence of sinking backfill has been identified at the site.