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

Report Nos.: 50-424/86-36 and 50-425/86-16

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: April 14-18, May 5-9, June 9-13, and June 30 - July 3, 1986

Inspector: T E Conlon for 8/6/86
J. R. Harris Date Signed

Approved by: T E Conlon 8/6/86
T. E. Conlon, Section Chief Date Signed
Engineering Branch
Division of Reactor Safety

SUMMARY

Scope: This special, announced inspection was conducted in the areas of followup on employee concerns in coatings and installation of a seismic gap filler (BISCO blocks).

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

*D. O. Foster, Vice President, Project Manager
*E. D. Groover, Vogtle Quality Assurance Manager
*B. C. Harbin, Construction QC Manager
*G. A. McCarley, Project Compliance Coordinator
N. Brooks, Civil Engineering Section Supervisor
*D. Innes, Assistant Supervisor, Civil Engineering Section
*R. W. McManus, Readiness Review Team Leader
*N. Lankford, Civil QC Section Supervisor
*L. Bishop, Civil QQ Inspection Supervisor
*M. Stone, Assistant Civil Project Supervisor
D. Brunton, Civil Engineer
L. Dickerson, Civil QC Supervisor

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

NRC Resident Inspectors

*H. Livermore
*J. Rogge

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on April 18, May 9, June 13, and July 3, 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

This subject was not addressed in the inspection.

4. Unresolved Items

Unresolved items were not identified during the inspection.

5. Employee Concerns, Discussions, and Findings

The following employee concerns were reviewed:

a. Unqualified Coatings QC Inspector

(1) Concern

There was a female QC inspector who worked for Williams Contractor who was not qualified. The inspector would not check coatings in high places and inspections she did were poor. There was also a male inspector who was loose in his inspections. Most of the other inspectors did a good job.

(2) Discussion

The inspector reviewed the personnel files of the referenced QC inspectors. Review of files on the female QC inspector showed that she had taken and passed the training courses for a Level I coating inspector and that she was a qualified Level I QC inspector. Review of her records did indicate that she had been reprimanded three times for poor work performance and that she was afraid of working in high places. Review of the personnel files indicated that she resigned as a QC inspector on March 27, 1984. Discussions with QC supervisors and coating engineers indicated that the referenced female QC inspector was not allowed to approve coatings in Category I areas since she was only a Level I inspector. Final inspection of coatings in Category I areas requires a Level II certification.

Review of personnel records of the referenced male QC inspector showed that he was hired in 1982 and that he became a Level I QC inspector in March 1983 and a Level II QC inspector in June 1984. Review of training records showed that he passed the test requirements for a Level I and Level II inspector and that he was a qualified Level II inspector. Review of the files showed no evidence of poor performance as a coating inspector.

(3) Findings

Review of records on the referenced female QC inspector showed that she was a qualified Level I QC inspector. However, review of records also indicated that she had been reprimanded three times for poor work performance and that she did not like to work in high places. Discussions with responsible management indicated that she was a Level I inspector and hence was not allowed to approve work in Category I areas. Thus, she had no impact on coatings in safety-related areas.

Review of the personnel records of the referenced male QC inspector indicated that he was a qualified Level II QC inspector. No evidence of poor work performance was identified in the records or in discussions with coating engineers and QC inspectors.

b. Use of Wite-Out to Cover Coating Defects

(1) Concern

The alleger indicated that he worked in the bottom of the containment and that wite-out (a typewriter correction fluid) was frequently used to cover defects in the coatings so that they would pass inspection. Most of the defects covered with wite-out were about the size of a dime with the largest being about the size of a half dollar.

(2) Discussion

The inspector discussed the possible use of wite-out with six coating QC inspectors and six coating foremen and walked down the inside of the containment, auxiliary and control buildings and examined the coatings for evidence of failure. The inspector also discussed the effect or the use of wite-out on the Keeler Long System being used in the containment with the manufacturer's representative.

Discussions with coating QC inspectors and foremen indicated that they knew of no examples of or heard of any examples of the use of wite-out to cover defects on coatings. Discussions with the manufacturer's representatives indicated that he had no test data or basis of fact for determining whether or not the use of wite-out would have any adverse affect on the coatings. A walkdown inspection of coatings in structures in the power block showed no evidence of a coating failure that could result from the use of wite-out. Some minor failures were noted but these appeared to be due to inadequate preparation. These minor failures had already been identified by QC inspectors and measures were being taken to repair the failures.

The primary use of coatings is for corrosion protection and to aid in decontamination cleanup in case of a radioactive spill. Coatings in buildings other than the containment building are not considered safety-related. The concern with coating failures in pressurized water reactor containments like the Vogtle Plant is that during a loss of coolant accident (LOCA) large amounts of coatings would peel off the walls and clog the screens of the emergency sumps. These sumps serve as a water source to effect the long-term recirculation for the functions of residual heat

removal, emergency core cooling, and containment atmosphere cleanup. All of the coatings used in the containment have been tested to show that they will not fail during a LOCA if they are applied in accordance with specified requirements.

The alleger stated in his concern that most of the defects on which wite-out was used were about the size of a dime with the largest being about the size of a half dollar. If wite-out was used on the coatings and the coatings failed because of the wite-out, the small amount of debris resulting from these failures would not be enough to clog the sump screens or have any affect on the operability of the recirculation pumps.

(3) Findings

The inspector was unable to prove or disprove that wite-out was used to cover defects on coatings in the containment building. A walkdown inspection of coatings in the power block structures did not disclose any evidence of coating failures that should have resulted from the use of a material such as wite-out that is not compatible with the Keeler Long Coating System. If wite-out was used and coating failures occur because of its use, the small amount of debris resulting from the dime size and half dollar size areas they were used on would not be enough to clog the sump screens or affect the operability of the recirculation pumps.

c. Improper Use of Paint Thinner

(1) Concern

Procedures require QC inspectors to observe the amount of paint thinner mixed into paint before the paint is applied. It was a common practice by the sprayman and foreman to distract the QC inspector so that extra thinner could be added to the paint. This was done so that the paint could be applied easier and produce a better looking finish. The specifications allowed the addition of up to one pint of thinner per five gallons of paint. The extra thinner results in a reduction of paint thickness.

(2) Discussion

The inspector examined requirements for mixing, application and inspection of coatings specified in specifications and procedures. The inspector also discussed coating requirements with coating applicators, foremen, and QC inspectors and reviewed deviation reports covering violations of coating requirements.

Review of specifications and procedures showed that the amount of allowable thinning varies with the system being used and environmental conditions. Specified thinning requirements are as follows:

- Inorganic Zinc on Ferrous Substrate - Thin up to 30 percent depending on environmental conditions and to build millage zinc shall be thinned to 50 percent

- Epoxy Primer on Ferrous Substrate - No more than one pint of thinner to one gallon of paint.

- Epoxy Top Coat on Previously Coated Ferrous Substrate - Thin no more than one pint of thinner to a gallon of paint when using Ameron 90N and up to 25 percent when Carbo 191 HB is used.

- Sealer Compound on Concrete Substrate - Thin one gallon of paint to one gallon of thinner.

- Epoxy Surfacer on Primed Concrete - Up to one pint of thinner per gallon of paint initially, and up to two pints of thinner per gallon of paint during the pot life.

- Epoxy Top Coat on Coated Concrete Substrate -

Temperature	Brush/Roller/ Airless Spray	Conventional Spray
55° - 70°	1 pint per gallon	1.5 pints per gallon
70° - 85°	1.5 pints per gallon	1 quart per gallon
85° - 100°	1.5 pints per gallon	2.5 pints per gallon
100° - 120°	1.0 pint per gallon	1.5 pints per gallon

Review of procedures and specifications also indicated that the QC inspectors are required to verify the thickness of coatings on ferrous surfaces with a dry film thickness gauge and the thickness of coatings on non-ferrous surfaces with a wet film thickness gauge. Thus, if too much thinner were used, the resulting reduction in paint thickness should have been identified by the dry and wet film thickness gauges.

Interviews with applicators QC inspectors and foremen disclosed no evidence of distraction of QC inspectors so that extra thinner could be added to the paint. However, review of deviation reports did disclose that there had been errors made in the use of thinners. These deviation reports were written to identify examples of failure to thin coatings and use of incorrect thinner. Review of these reports showed that these problems were properly addressed and that the deviations were properly dispositioned.

(3) Findings

Discussions with QC inspectors, applicators, and foremen did not reveal any evidence of distracting QC inspectors so that extra thinner could be added to the paint and thus make it easier to apply. Review of thinning requirements specified in procedures indicated that considerably more the one pint of thinner per five gallons of paint as stated in the concern is permissible.

Examination of procedure WC-002, Hold Point Procedure, showed that the QC inspectors are required to inspect and document the dry film thickness of coatings on ferrous substrates and the wet film thickness of coatings on non-ferrous substrates. Thus, even if excess thinning resulted in a reduction of paint thickness, this reduction should have been identified by QC inspectors during their inspections.

d. Removal of Equipment Controlling Painting Environment

(1) Concern

Blowers and heaters were often required to control environmental conditions in the rooms to be painted. After QC inspectors checked to see if the equipment was in place and operation, the painters would turn the equipment off so that they could paint faster. On many occasions, blowers were turned on to control the temperature and humidity in a particular area and this equipment made it difficult to spray paint because of the air currents affecting the paint spraying. When the inspectors would leave, the painters would turn off the blowers. Once the equipment was turned off, the conditions would return to the state that required the equipment be used in the first place.

(2) Discussions

The inspector interviewed coating applicators, QC inspectors, and foremen, and discussed with them the use of heaters and blowers for control of environmental conditions. The inspector also reviewed deviation reports, specifications and procedures, and examined coatings to see if there was any evidence of coating failures due to adverse environmental conditions.

Discussions with coating applicators, QC inspectors, and foremen confirmed that heaters and blowers are sometimes used to control the humidity and temperature to that specified by the specification, procedures and manufacturers requirements. However, these discussions did not confirm that the heaters and blowers were being turned off when QC inspectors left the coating work area. Review of deviation reports showed damage to coatings had sometimes occurred because heaters were placed too close to an area being coated, but did not disclose any instances where

heaters were being turned off. Review of the deviation reports also indicated that several cases of delamination of coatings were identified where coatings were not applied in accordance with temperature and humidity requirements. Examination of dispositions of these deviation reports showed that these problems were properly addressed. Examination of coatings in the power block structures showed no significant coating failures which could result from lack of failure to control environmental conditions with heaters or blowers. Some small minor failures were observed, however, these were identified by the licensee and steps were being taken to repair them.

(3) Findings

The inspector was not able to confirm that heaters and blowers used to control environmental conditions were turned off when the QC inspector left the working area. Review of deviation reports showed that violations of environmental controls and misuse of heaters and blowers did occur but that corrective measures were taken to repair coating damage resulting from these violations of requirements. Inspection of coatings in the powerblock showed only a few cases of minor coating failures. These were identified by QC inspectors on deviation reports and measures were being taken to repair them. No significant failures of coating that would be readily visible from failure to control environmental conditions were observed by the inspector.

e. Blasting (Shot) Material on Walls and Piping Surfaces Coated Over

(1) Concern

In the Unit 2 containment area Level A while blasting wall surfaces in preparation for coating, they used too soft of a material in the blasting process. The blasting material was so soft that it literally stuck into the wall and piping surfaces and was allowed to remain. These areas were simply coated over.

(2) Discussion

The inspector reviewed deviation reports, specification and procedure requirements, and discussed blasting operations with coating engineers and QC inspectors.

Discussions with coating engineers and review of deviation reports disclosed that the concern is correct as stated. However, the item was identified by the licensee in deviation reports WC 84-090 and WC-85152 and quality concern number 86V0028. Investigation of these item included blasting of the steel substrate in accordance with the steel structures painting council surface preparation specification SSPC-SP10 to remove the coating having embedded abrasive. Following the blast cleaning, the liner plate was

inspected by representatives of the Williams Coating Company, Georgia Power Company, and Bechtel Power Corporation. The concensus of opinion was that the cleanliness exceeded the specification requirements of SSPC-SP10. They also concluded that any tightly adhering abrasive embedded in the surface of the steel substrate may be coated without causing any detrimental affect to the applied coating material. However, discussions with some of the GPC QC inspectors and Williams painting contractor personnel indicated that they did not agree with the decision reached by the Georgia Power and Bechtel coating engineers. They felt that the amount of embedded material exceeded that allowed by specification SSPC-SP10. Some of the Williams Coating company personnel felt that the abrasive material could cause corrosion to develop on the liner plate. Discussions with the Georgia Power QC personnel indicated that while they felt the amount of abrasive material was excessive, they did not feel it was enough to cause a problem and that the ultimate responsibility for the amount of acceptable abrasive material was that of the Bechtel design engineers.

Revjew of procedures and specifications and inspection records indicated that the coating system being used on the liner plate is an inorganic zinc material. An analysis of the failure made of this material shows that it is a powdering rather than a blistering or delamination and thus its failure in the event of a LOCA would not have an effect on the safe operation of the plant.

(3) Finding

The concern is correct that there was a problem with excessive abrasive material adhering to some of the containment Unit 2 liner plate. This was identified in Deviation Reports WC 84090 and WC 85157 and quality concern 86V0028. As a result, the identified areas were blasted to remove the coatings and any loosely adhering embedded abrasive.

After blasting, the area was reinspected by personnel from Williams Coating Company, Georgia Power and Bechtel Power Company. The concensus of opinion was that the cleanliness was acceptable and that tightly adhering abrasive material was acceptable. Some Williams personnel and Georgia Power QC inspectors disagree with the opinion of the Georgia Power and Bechtel coating engineers. Some Williams personnel feel the amount of embedded material was excessive and that it may eventually cause some corrosion of the liner plate. The Georgia Power QC inspector indicated that although it did not meet SP10 cleanliness requirements, they did not think the embedded materials would cause a problem with the coatings on the liner plate and that the ultimate responsibility for acceptance was that of the coating engineers. The basic concern with the excessive abrasive material appears to be a corrosion and subsequent maintenance problem. Coating failures of

the inorganic zinc is a powder form which will not have any effect on the safe operation of the plant.

f. Coating in Turbine Building Drain Piping Has Shot Embedded in Them

(1) Concern

Coatings in the turbine building drain piping from cooler has shot embedded in them and coated over.

(2) Discussion

Piping in the turbine plant cooling water system supplies cooling water to remove heat from nonsafety-related heat exchangers. The turbine plant cooling water system is not required for the safe shutdown of the plant and has no safety design basis. Inspection of coatings in this area is not part of the requirements of the NRC Code of Federal Regulations. Improper coatings in this area will not have any effect on the safe operation of the plant and will only result in additional maintenance problems.

(3) Findings

Coatings in the turbine building are not safety-related and inspection of coatings in this area are not required by the Code of Federal Regulations or the Georgia Power QA/QC program. Improper coatings would only result in a maintenance problem. This concern has no safety significance.

g. Wall Surfaces Prepared Prior to Coatings with Improper Solvents

(1) Concern

Wall surfaces were washed with an oil base solution of brand name XYLOY. They then coated with epoxy paint over the oil base cleaner. The epoxy wall coating will not properly bond to XYLOY cleaner.

(2) Discussion

The inspector discussed the use of solvents used to clean wall surfaces with QC inspectors, coating engineers, and the technical representatives of the manufacturer of the epoxy coatings. The inspector also reviewed the Application Procedure Manual for Surface Preparation and Application of Coatings.

Discussions with QC inspectors, the epoxy manufacturers technical representative, and examination of procedure WC-301, solvent cleaning, showed that XYLOY is an acceptable solvent for cleaning

concrete surfaces. The manufacturers technical representative in a letter to the licensee dated April 17, 1986, stated that XYLOY is an acceptable media for cleaning prior to application of epoxy coatings as the coating system being used has XYLOY in its formulation.

(3) Finding

Examination of this concern showed that XYLOY is an acceptable solvent for cleaning concrete surface prior to coating with epoxy coatings.

h. Improper Blasting of Piping and Mill Ratings Damaged to Pipe Walls

(1) Concern

In 1982 and 1983, everything in piping had to be "White Blasted" and for quite some time (several months), piping was being improperly and excessively blasted with hard pellets. A great deal of the work was done at a hard cutting 45 degree angle and caused wearing on the pipe surfaces to the extent that the blasting actually robbed mill ratings from pipe walls.

(2) Discussion

The inspector discussed cleaning of piping with Georgia Power and Pullman Products (PPP) engineers and reviewed nonconformance reports written against improper blasting of piping. The inspector also reviewed NRC inspection reports on inspection of piping and discussed piping problems with NRC inspectors involved in the inspection of piping.

Discussions with engineers and quality control inspectors and review of nonconformance reports showed that there was a problem with improper blasting of piping and that 14 nonconformance reports were written because of improper blasting of piping. Review of NRC inspection reports and discussions with NRC piping inspector showed that improper blasting of piping was investigated during an inspection conducted on February 21-24, 1984. During the February 1984 inspection, the NRC piping inspector confirmed that there was a problem with improper blasting of pipes. The inspection disclosed that the licensee had identified the problem and taken corrective action to resolve the problem. However, the licensee's corrective action was determined to warrant followup for review of its adequacy. As a result, the NRC piping inspector opened NRC Inspector Followup Item 424, 425/84-05-07, Pipe Improperly Sand Blasted.

(3) Findings

Investigation of this concern substantiated that there was a problem with improper blasting of piping. This was identified in NRC Inspection Report No. 424, 425/84-05 as Inspector Followu Item 84-05-07, Pipe Improperly Sand Blasted. This item is still being investigated by NRC piping engineers for adequacy of corrective action.

i. Williams' Company Management and Supervision are Unqualified for Jobs

(1) Concern

Williams Company is full of kinship hire (nepotism) and because just about all management and supervisors are related to each other and are not qualified by experience or training, they do a lot of things out of specification due to ignorance of how the job should be done.

(2) Discussion

The inspector examined the personnel files and certification records of 21 management and supervision personnel. Examination of these records showed that almost all of them had prior commercial coating experience. Those that did not were hired as apprentices and were given on-the-job training. Review of the records showed that all except one had taken and passed a written painting exam given to new hires. Review of records showed that the painter who failed the written test did have six years of prior painting experience and that he had been certified through a painting application test. Review of records also showed that all of the other 20 managers and supervisors had been certified through a painting application test. Discussions with the Williams' site project manager disclosed that the company was a family owned business and that some of the management and supervisors were related. However, he indicated he was not related to anybody in the company.

(3) Findings

Some of the management and supervision are related. Review of personnel records indicated that they had previous coating experience, were certified by painting application tests or given on-the-job training if hired as an apprentice, and thus were qualified for the work they were doing. This inspector's experience in the job market has shown that it is not unusual for companies to hire employees on the basis of recommendations from other company employees.

j. Williams' QC Inspectors Were Unqualified

(1) Concern

Williams Company QC inspectors were unqualified and hired largely because of Williams' nepotism policy. They were taken off of QC inspection duties and replaced by qualified QC inspectors from the Georgia Power Company (GPC). However, not before a lot of damage was done to pipe wall thickness by overblasting.

(2) Discussion

The inspector reviewed qualification records of 13 Williams' QC inspectors and discussed responsibility of the GPC involvement in coating inspections with GPC coating engineers and QC coating inspectors. The inspector also interviewed five Williams QC inspectors.

Review of the 13 Williams' QC inspectors records and discussions with five of the 13 QC inspectors showed that they were qualified and that they were knowledgeable in specification and procedure requirements for coatings. Discussions with GPC QC inspectors and engineers disclosed that GPC QC inspectors have never replaced any of Williams QC inspectors and that Williams QC inspections have always had the primary responsibility for QC inspection of coatings. GPC QC inspectors only perform a surveillance inspection of work done by Williams' applicators and QC inspectors.

(3) Findings

Review of personnel records and discussion with QC inspectors showed that the Williams' QC inspectors were qualified and that GPC QC inspectors have not replaced any of Williams' QC inspectors. Damage to piping by overblasting is addressed in paragraph j.

k. Coatings Cracking Off of Surfaces

(1) Concern

Coatings in the auxiliary building, control building, and some parts of the turbine building are cracking off already.

(2) Discussion

The inspector walked down and examined coatings in the auxiliary building, control building, and turbine building and reviewed specification and the Final Safety Analysis Report (FSAR) for coatings in these buildings.

Review of the FSAR and specification requirements disclosed that coatings in these buildings are not safety-related and that a failure of coatings in these areas would not cause any problem with the safe operation or shut down of the plant. A walkdown and examination of coatings in these buildings showed some minor coating problems in the control building. However, these were identified by the licensee and were being repaired. A walkdown of the auxiliary building showed that there were some significant problems with coatings on the north wall of the auxiliary building. This has been an ongoing problem as a result of water seeping through the concrete and causing bubbling and peeling of the coatings. The inspector has observed this problem during numerous inspections performed at the site from 1980 to the present. The licensee has had an ongoing program to repair and control the water seepage problem in this building. During this inspection, the inspector observed that the problem in the Unit 1 side has been essentially corrected and that some repair work still needs to be done on the Unit 2 side. However, it is expected that this will be an ongoing nuisance problem and will require some maintenance throughout the lifetime operation of the plant.

(3) Findings

There has been a problem with coating failure on the north side of the auxiliary building due to water seeping through the concrete and causing bubbling and peeling of the coatings. This has been an ongoing problem and the licensee has been taking measures to control the seepage problem. The problem is a nuisance problem and is not a safety problem. No significant problems with coating were observed in the control building or turbine building. Coatings in the referenced buildings are not considered safety-related and a failure of coatings in these buildings would not have any effect on the safe operation of the plant.

1. Unit 2 Dome was Improperly Coated

(1) Concern

While outside coating Unit 2 dome, coaters were ordered to paint over rust. This was in violation of specifications. Coaters painted over water in humidity well over the 80 percent factor and also painted over visible rust. Alleger believes that within eight to ten years, pipe hangers will be rendered insecure at the welds because of decay caused by rust eating into the hangers under the coatings.

(2) Discussion

The inspector discussed coating of the Unit 2 dome with Williams Company, GPC QC inspectors, and Bechtel and GPC coating engineers. The inspector also reviewed specification requirements, inspection and deviation reports on the Unit 2 dome liner plate, observed coatings on the dome, and examined picture slides taken of coatings on the Unit 2 dome.

Examination of the coating specification showed that coatings shall not be applied when the surface temperature is less than five degrees above the dewpoint or when the humidity is about 90 percent. Review of the deviation reports and discussions with coating engineers and QC inspectors disclosed that there was a concern regarding improper application of coating on the Unit 2 dome liner plate. As a result of this concern, Deviation Report WC-85096 was written to address the concern. As a followup, the Unit 2 dome liner plate was inspected by technical representatives from the Carboline Company (coatings manufacturer), the Bechtel Power Corporation and the Georgia Power Company. Results of these inspections disclosed that there were minute craters or crevices in the Carboline 191HB top coat on the dome liner plate. Examination under magnification showed that they the largest of these imperfections was about 20 miles in diameter and that for the most part, they were covered with the 191HB top coat. The conclusion of this reinspection of the liner plate was that these imperfections would not cause any deleterious effects to the Carbo Zinc 11/Carboline 191HB system in the event of a Loss of Coolant Accident (LOCA) during a of Design Base Accident (DBA). Visual examination of the coatings and picture slides of the coatings on the dome liner plate by the NRC inspector showed no evidence of any coating failure.

(3) Findings

There was a concern regarding the improper application of coatings on the dome liner plate. As a result of this concern, the dome liner plate was reinspected by coating engineers from the coating manufacturer, Bechtel Corporation, and GPC. The concensus of opinions was that the coating was acceptable and would perform satisfactorily in the event of a LOCA during a DBA. Visual examination of picture slides of the dome coatings and coatings on the dome liner plate by the NRC inspector showed no evidence of coating failure.

m. Coatings Improperly Applied to Unit 2 Containment Building Dome

(1) Concern

While the dome of Unit 2 was on the ground, they coated the steel while steel readings were far too hot and humid. This will probably produce air bubbling to coatings.

(2) Discussion and Finding

This is the same as the concern discussed in paragraph 1. above.

n. Coatings Applied Over Wet and Rusty Hangers in Unit 2 Dome

(1) Concern

Coating were applied over wet and rusty pipe hangers which had been welded to the dome for the Upper Head Injection Spray System. The alleger felt that because they coated over these hangers, they would rot-out over time and the stainless steel piping would rip-out of the "bubble".

(2) Discussion

The inspector discussed inspection of the Unit 2 dome brackets with QC inspectors and coating engineers. Results of this discussion disclosed that there was a concern regarding improper coating and inspection of these hangers. Discussions also disclosed that a quality concern on this issue was reported to the Vogtle Quality Concern Group.

As a result of these concerns, an investigation of all the hangers in the Unit 2 dome was conducted. This investigation was performed by an inspection team consisting of technical representatives from Bechtel, Ameron Corporation (coating manufacturer), Georgia Power Company engineers and QC and the Williams Coating Company. Every hanger in the dome that had been coated was reinspected for visual defects and dry film thickness. Pull tests were also performed on five hangers that were reported by a crew member as the worst cases of painting over flash rusting. The pull tests exceeded the 250 PSI minimum and no rusting was visible. As a result of this investigation, the inspection team was not able to identify any of the discrepancies

associated with the alleged concern. However, the investigation team did identify problems that were not addressed by this concern. Deviation report SQ-71 was written to address these problems. Problems identified by the inspection team included:

- Contaminants in coating
- Delamination
- Improper surface preparation
- Light millage
- Runs or sags
- Excessive material
- Holidays
- Improper Feathering
- Mechanical Damage
- Total millage exceeding specification limits

Discussions indicated that correction of these problems are still going on and that the Deviation Report will not be closed until all the problems are corrected. Review of the closure of the Deviation Report will be examined during subsequent NRC inspections.

(3) Findings

The concern regarding coating of the Upper Head Injection System hangers while they were wet and rusted could not be substantiated. This concern was also identified to the GPC Quality Concern Group. All Unit 2 dome hangers were reinspected by a team consisting of technical representatives from the Williams Coating Company, Ameron Corporation (coating manufacturer), Bechtel Power Corporation, and GPC. The inspection did not disclose any evidence of coating outside the environmental requirements of over rust. However, several examples of improper coating application and acceptance were identified. These were reported in Deviation Report SQ-0071 and measures are being taken to correct these deficiencies. Review of these corrective measures will be examined in subsequent NRC inspections of coatings.

o. Improper Installation of BISCO Blocks

(1) Concern

Lead impregnated foam called BISCO blocks was installed out of specification. This material was placed in between the Containment and Fuel Handling Building on both Units 1 and 2. This material was supposed to have been carefully placed into position with a compound applied between the joints. All of this should have been done in accordance with the specification prior to the concrete pour. No compounds were ever put between joints and the

blocks were never laid in before the concrete pour. Instead, the crew cut the concrete with a saw and the blocks were literally driven in between the joints. There were even instances when driven into place, the blocks were badly battered because of the method of application (after the pour). This placement after the concrete pour was not in accordance with procedure requirements and specification requirements.

(2) Discussion

The inspector examined specification X1AG03, Expansion Joints, and procedure CD-T-27, Installation of Seismic Gap Filler for the requirements on the installation of BISCO blocks and reviewed deviation reports written against the improper installation of BISCO blocks with civil engineers. The inspector also walked down and examined installed BISCO blocks in the Containment, Fuel Handling, and control buildings.

Review of specification X1AG03 and procedure CD-T-27 showed that BISCO material comes in two forms, BISCO SF-100 and BISCO SE-Foam. The SF-100 is a high density lead impregnated foam used in seismic gaps where radiation and fire shielding is required. The SE-Foam is used in seismic gap areas where only fire protection is required. Review of procedure CD-T-27 showed that the BISCO material can be installed against an existing concrete surface when concrete is to be placed against it (paragraph 5.2) or installed in the gap between two existing concrete structures (paragraph 5.3). Discussions with engineers indicated that most of the BISCO material was placed between the seismic gap of existing structures after the concrete was placed. To do otherwise, would have been impractical because a styrofoam material was placed between the walls of buildings before the pouring of an adjacent wall to insure that the proper seismic gap was maintained. After pouring the walls, the styrofoam was removed. If the BISCO material had been placed before the placement of the concrete, it would have been almost impossible to remove the styrofoam gap spacer. Discussions with engineers also disclosed that a worker had filed a Quality Concern with the GPC Quality Concern group regarding improper installation of BISCO material. As a result of this concern, two Bechtel engineer and a member of the GPC Quality Concern office accompanied the worker filing the concern to inspect areas in the plant to where it was alleged that the seismic gap filler was improperly installed. This inspection verified that there were problems with the installation of BISCO blocks and that the workers' concern was valid. Problems identified are as follows:

- Areas where the material had been cut into a wedge shape to facilitate installation, thus reducing the depth of the material below the required depth

- Less than full required depth of installation in some areas where small wedges of material had been used to fill in gaps
- Areas where adequate cleaning of the surfaces was not performed prior to installation of the material, severely reducing adherence of the seismic gap filler material
- Gaps between segments through which light could be seen and air drafts could be felt
- Backwards installation of material that had pre-cut angles designed to fit into acute and obtuse wall intersections
- Areas where material had been installed without proper adhesive, making it easy to push out of place
- Areas where material had been pushed out of its original location due to poor adherence and post-installation abuse.

As a followup of the above identified problems, a walkdown inspection was also performed by GPC construction personnel to identify, disposition, and correct the problems of improper installation of BISCO material in the containment, control, auxiliary, and fuel handling buildings. As a result of this walkdown, deviation reports CD 8366, CD 8367, and CD 8349 were written to address problems of improper installation of BISCO material. The inspector reviewed the disposition of these deviation reports and walked down and examined completed and ongoing repair work in the containment buildings. This walkdown indicated that problems with improper installation of BISCO material is being properly addressed.

The inspector also questioned the licensee as to whether or not the installation of the BISCO material complied with the NRC Branch Technical Position CMEB 95-1 for fire protection. These discussions indicated that there was some confusion as to whether or not a proper QA program existed for the installation of the BISCO material. As a result of the inspector's concern, the QA program for the installation of BISCO material was evaluated by two NRC Fire Protection Engineers. Their evaluation indicated the licensee did not have a proper QA program for the installation of BISCO material. This resulted in the identification of Deviation 50-424/86-64, 50-425/86-30, QA Program for Fire Protection System Does Not Meet Branch Technical Position CMEB 95-1. Resolution of this deviation will be pursued in future NRC inspections.

(3) Findings

There were problems with improper installation of BISCO material. This problem was investigated by the QC staff, Bechtel engineers and GPC staff. Problems were identified and repair work on improper installation of BISCO material is being made. The allegers concern that the procedure required the BISCO material be placed before pouring concrete is not entirely correct. Review of procedure DC-T-27, "Installation of Seismic Gap Filler" allows for the installation of BISCO material either before or after the placement of concrete walls. In areas where styrofoam is used as a spacer to insure that the proper seismic gap is maintained (most common area where BISCO material is placed), the preferred method of installation is after the concrete walls are placed. To place the material before pouring, the adjacent concrete wall would make it very difficult to remove the styrofoam seismic gap spacer. A walkdown inspection of the containment and fuel handling building showed that problems with improperly installed BISCO material are being corrected. Examination of the QA program by NRC Fire Protection Engineers indicated the installation of the BISCO material did not comply with the NRC branch technical position for fire protection. This was identified to the licensee as Deviation 50-424/86-64, 50-424/86-30, QA Program for Fire Protection System Does Not Meet Branch Technical Position CMEB 95-1. Resolution of this deviation will be pursued in future NRC inspections.