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Georgia Power
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LCV-0651

Docket No. 50-424

U. S. Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
SPECIAL REPORT 1-95-3
CONTAINMENT TENDON SURVEILLANCE DEFICIENCY

In accordance with the requirements of Vogtle Electric Generating Plant Technical Specifications (TS) sections 3.6.1.6.b and 6.8.2, Georgia Power Company submits the enclosed special report concerning a containment tendon surveillance deficiency.

Sincerely,

C. K. McCoy

CKM/TEW

Enclosure: Special Report 1-95-3

xc: Georgia Power Company
Mr. J. B. Beasley, Jr.
Mr. M. Sheibani
NORMS

U. S. Nuclear Regulatory Commission
Mr. S. D. Ebneter, Regional Administrator
Mr. L. L. Wheeler, Licensing Project Manager, NRR
Mr. C. R. Ogle, Senior Resident Inspector, Vogtle

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VOGTLE ELECTRIC GENERATING PLANT - UNIT 1
TECHNICAL SPECIFICATION SPECIAL REPORT 1-95-3
CONTAINMENT TENDON SURVEILLANCE DEFICIENCY

A. REQUIREMENT FOR REPORT

This report is required in accordance with the Vogtle Electric Generating Plant Technical Specifications (TS), section 3.6.1.6, action statement b. This action statement contains the following requirements:

"With the indicated abnormal degradation of the structural integrity other than ACTION a. at a level below the acceptance criteria of Specification 4.6.1.6, restore the containment(s) to the required level of integrity or verify that containment integrity is maintained within 15 days; perform an engineering evaluation of containment(s) and provide a Special Report to the Commission within 30 days in accordance with Specification 6.8.2 or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. The provisions of Specification 3.0.4 are not applicable."

During the performance of the combined Unit 1 tenth year/Unit 2 fifth year tendon surveillance, a Unit 1 horizontal tendon was discovered to have sheathing filler grease voids which exceeded the acceptance criteria of Specifications 4.6.1.6.1.d (grease voids identified in excess of 5 percent of the net duct volume). A 6.7 percent grease void was identified in Tendon H120 during regreasing of the tendon.

B. SUMMARY OF REGREASING OPERATION DURING THE TENDON SURVEILLANCE

For horizontal tendons, hot grease is pumped in one end of the tendon until a minimum of 5 gallons of grease, free of any visible foreign substances and air bubbles in excess of 1/8" diameter, exits the opposite end. If the exit criteria is not met, then grease is pumped into the opposite end of the tendon. The grease is pumped at between 150 and 210 degrees Fahrenheit, at a maximum pressure of 100 psig, for a minimum of 30 minutes. If the grease exiting the opposite tendon end stops suddenly of its own accord or the grease flow slows so that the exit

criteria will not be met, the pumping must continue an additional 30 minutes from that point. Finally, the tendon grease void is calculated by taking the total grease added, subtracting the total grease removed, and dividing by the net tendon duct volume.

C. DETAILS OF DISCOVERED DEFICIENCIES

On July 20, 1995, during regreasing of Unit 1 horizontal tendon H120, a void of 6.7 percent was measured. A total of 33 3/4 gallons had been lost from the tendon (19 3/4 gallons lost from buttress 3 and 14 gallons from buttress 2), and a total of 61 gallons of grease was injected into the tendon (34 1/2 gallons injected into buttress 3 and 26 1/2 gallons into buttress 2). In addition, the exit criteria was not met when grease was pumped into the buttress 3 end of the tendon, but was met when grease was then pumped into the buttress 2 end.

D. ENGINEERING EVALUATION

The procedure used by the Georgia Power Construction Department for installing the tendons assured a high degree of corrosion protection for the tendons. The tendons were handcoated with Visconorust 2090 P-4 as they were pulled into the sheathing. Additionally, the tendons were coated with a temporary corrosion preventive material at the factory. During the greasing procedure, vents were opened to allow the release of air bubbles. Hot grease was pumped until a clear flow of grease was observed exiting the appropriate vent. Inspections were made to identify any grease leakage which might occur from the tendon duct. This process ensured that the tendons originally received a thorough coating of grease.

Visconorust 2090 P-4, which is manufactured by the Viscosity Oil Company, provides an effective barrier to moisture and air which retards the effect of a corrosive atmosphere. The grease provides a protective film which is not easily penetrated by free water and which has a reserve alkalinity for long term acid neutralization. The film aids in retarding corrosion introduced by water soluble

ions from chlorides, nitrates, and sulfides. During the surveillance, grease samples were taken from the ends of tendon H120 to determine the reserve alkalinity of the grease. The grease test results are expected at the end of September. A supplemental report will be submitted to the NRC if the grease samples do not meet the required criteria.

There are several factors that could have contributed to the grease void for tendon H120 exceeding 5 percent of the net duct volume:

1. Visconorust 2090 P-4 has a coefficient of expansion which yields an expansion of about 1 percent per 20 degrees Fahrenheit. Initial filling temperatures of the filler material can average 180 degrees Fahrenheit. With an ambient temperature of 90 degrees, a shrinkage of 4 1/2 percent of the net duct volume can occur.

2. Calculated voids between the strands which comprise the tendon bundle are approximately 3 percent of the net duct volume. If during the initial filling operations the tendon bundle is cold (ambient temperature of 65 degrees Fahrenheit), small voids can be left between the strands as the hot grease solidifies on the surface of the cool tendon bundle. During the tendon surveillance regreasing process, hot grease is again pumped into the tendon sheathing. As this hot grease comes in contact with the cold grease surrounding the tendon and warms it, it is likely that the grease will enter the tendon bundle voids. This migration could also occur at other areas such as where tendon strands are in close proximity to the tendon sheathing.

3. Pumping operations can introduce air into the filler material which may account for as much as 2 percent of the net duct volume.

4. The grease may not completely fill the voids in the duct when injected at high velocity.

During the tendon surveillance, horizontal tendon H120 was detensioned and a strand was removed for visual examination and tensile testing. The removed strand was found to be free of cracks and corrosion during the visual surveillance. Tensile test results are expected in late September 1995 and a supplemental report

will be submitted to the NRC if the tensile test's acceptance criteria are not met. The lift-off force was well above the required values, which confirmed that the void had no adverse affect on the tendon. In addition, the end anchorages of the tendon were inspected for corrosion, grease coverage and anchorage cracking. No abnormal conditions were identified.

E. CONCLUSION

Based on the construction process used to initially fill the tendon ducts, characteristics of the grease, results of the lift-off tests, visual inspection of the tendon end anchorages and previous plant and industry experience, it can be concluded that no abnormal degradation has occurred in tendon H120 as a result of the presence of a grease void which exceeded the 5 percent acceptance criteria in Technical Specification 4.6.1.6.1.d. Therefore, the integrity of the Unit 1 containment has not been adversely affected by the discovered deficiency.