

November 15, 2005

Mr. Jeffery Archie
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88
Jenkinsville, South Carolina 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION - REVIEW OF STEAM GENERATOR
TUBE INSPECTION REPORT FOR THE SPRING 2005 OUTAGE
(TAC NO. MC7372)

Dear Mr. Archie:

By letter dated May 19, 2005, (ADAMS Accession No. ML051440438), South Carolina Electric & Gas Company, the licensee, submitted information pertaining to the steam generator tube inspections for the Spring 2005 outage at the Virgil C. Summer Nuclear Station (VCSNS). By E-mail dated September 7, 2005, (Enclosure 2) the licensee provided some additional clarifying information concerning the steam generator tube inspections.

The Nuclear Regulatory Commission (NRC) staff has completed its review of the report and concludes that the licensee provided the information required by the VCSNS technical specifications and that no additional follow-up is required at this time. The staff's review of the reports is provided in Enclosure 1.

If you have any questions regarding this matter, please contact me at (301) 415-1493.

Sincerely,

/RA/

Robert E. Martin, Senior Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosures: As Stated

cc w/encls: See next page

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REVIEW OF THE 2005 STEAM GENERATOR TUBE INSPECTION REPORTS

Virgil C. SUMMER NUCLEAR STATION

DOCKET NO. 50-395

By letter dated May 19, 2005, (ADAMS Accession No. ML051440438), South Carolina Electric & Gas Company, the licensee, submitted information pertaining to the steam generator (SG) tube inspections for the Spring 2005 outage at the Virgil C. Summer Nuclear Station (VCSNS). By E-mail dated September 7, 2005, the licensee provided some additional clarifying information concerning the steam generator tube inspections. A copy of the e-mail is provided in Enclosure 2.

The three steam generators at VCSNS were replaced in 1994 with steam generators fabricated by Westinghouse. Each steam generator contains 6307 thermally treated Alloy 690 tubes. Each tube has a nominal outside diameter of 0.6875-inch and a nominal wall thickness of 0.040-inch. The tubes were hydraulically expanded at both ends for the full length of the tubesheet and are supported by a number of stainless steel tube supports. The tubes installed in rows 1 through 17 were thermally stress relieved after bending.

The licensee provided the scope, extent, methods and results of their steam generator tube inspections in the documents referenced above. In addition, the licensee described corrective actions (e.g., tube plugging) taken in response to the inspection findings.

The licensee clarified (via E-mail) that possible loose part indications were detected in each steam generator; however, there were no indications of wear associated with these possible loose part indications. In addition, the licensee indicated that additional +Point™ examinations were performed to bound the possible loose parts indications. Secondary side inspections performed in each steam generator after sludge lancing confirmed no loose parts (accessible locations where possible loose parts were reported were visually investigated).

The licensee also clarified (via E-mail) that no dents or dings were reported during the 2005 outage that were not present in the 1994 pre-service inspection. The voltages reported for the dents and dings in the 2005 outage were compared to the voltages reported in the pre-service inspection and the average change in voltage was -0.1 volts in steam generator A, -0.6 volts in steam generator B, and -0.5 volts in steam generator C. The majority of the dents are located at the ninth tube support on the cold-leg side of the steam generator. The dents at this location are predominantly in the periphery of the tube bundle.

The licensee also provided (via E-mail) the following information related to the design of the steam generator:

Tubesheet thickness without clad = 22.7 inches; with clad = 23.015 inches

Flow Distribution Baffle thickness = 0.75 inches

Tube support plate thickness = 1.125 inches

The flow distribution baffle has nonafoil shaped holes in rows 3 and higher and trifoil shaped holes in rows 1 and 2.

Anti-vibration bars (AVB) are rectangular, 0.480 inch by 0.160 inch.

The AVB's penetrate the tube bundle as follows:

- Set 1 penetrates to Row 1 (some only reach Row 9)
- Set 2 penetrates to Row 19 (some only reach Row 23)
- Set 3 penetrates to Row 43 (some only reach Row 47)
- Set 4 penetrates to Row 75 (some only reach Row 79)

Low row U-bends are considered Rows 1 and 2. The smallest U-bend radius is in Row 1 and is 3.25 inches.

Based on a review of the information provided, the Nuclear Regulatory Commission (NRC) staff concludes that the licensee provided the information required by the VCSNS technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up action at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation, and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

Mr. Jeffrey B. Archie
South Carolina Electric & Gas Company

VIRGIL C. SUMMER NUCLEAR STATION

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