

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

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Report No.: 50-395/87-22 Licensee: South Carolina Electric and Gas Company Columbia, SC 29218 Docket No.: 50-395 License No.: NPF-12 Facility Name: Summer Inspection Conducted: July 23-24, 1987 Inspector: Nahl Gut. J. Ros's Date Accompanying Personnel: C. A. Hughey J. B. Kahle Rahle Approved by: J. B. Kahle, Section Chief Division of Radiation Safety and Safeguards Date Signed

SUMMARY

Scope: This routine, unannounced inspection was conducted in the area of plant chemistry.

Results: No violations or deviations were identified.

REPORT DETAILS

1. Persons Contacted

Licensee Employees

O. Bradham, D'rector, Nuclear Plant Operations
*J. Skolds, Group Manager, Operations
*M. Browne, Group Manager, Technical Support Service
*A. Koons, Manager, Technical Support
*F. Bacon, Associate Manager, Chemistry
R. Burch, Chemistry Supervisor
L. Colliger, Welding Supervisor
*A. Crybb, Plant Chemist
T. Effinger, Engineer, Corporate Technical Services
J. Frick, Supervisor, Performance Engineering
P. Troy, Steam Generator Argiect Manager

Nuclear Regulatory Commission

*R. Prevatte, Senior Resident Inspector *P. Hopkins, Resident Inspector

*Attended exit interview

2. Exit Interview

The inspection scope and findings were summarized on July 24, 1987, with those persons indicated in Paragraph 1 above. The inspector described the areas inspected and discussed the inspection findings. No dissenting comments were received from the licensee. The licensee did not identify as proprietary any of the material contrided to or reviewed by the inspector during this inspection.

3. Licensee Action on Previous Enforcement Matters

This subject was not addressed in the inspaction.

4. Plant Chemistry (79701)

This abbreviated inspection was performed for the following purposes: to review the degree to which the licensee had maintained the integrity of the primary coolant pressure boundary (especially the steam generator tubes) since the last inspection in this area in January 1986 and to review actions being taken by the ficensee in response to IE Notice 86-106 related to pipe wall thinning.

At the time of this inspection, the Sammer unit was operating at 100% power in the second month of its fourth fuel cycle. Through an audit of operational and chemistry data, the inspector concluded that the third

fuel cycle had been relatively stable and the level of chemistry control continued to significantly exceed the criteria recommended by the Steam Generator Owners Group (SGOG). However, chemistry control during several months had been complicated by the continual leakage of a total of 50 to 150 gallons of oil into the secondary water system. The source of the oil leak was eventually identified as a crack in the boot seal in "A" feedwater pump condenser. Although the presence of oil throughout the secondary water system affected measurements of conductivity and total organic carbon, the licensee did not identify any corrosive environments caused by the oil itself or by cleansing agents (e.g., sodium phosphate) that were used to remove oil contamination.

a. Integrity of Steam Generators

The principal problem related to the integrity of the steam generators continued to be primary side stress corrosion cracking of the steam generator tubes (see Inspection Report No. 50-395/86-01 dated February 11, 1986). Additional degradation of tubes within the tube sheet region resulted in further plugging of 269 tubes during the March-April 1987 refueling outage. However, reanalysis of earlier eddy current test data allowed the licensee to remove the plugs from 24 tubes.

Because of the large number of indications of primary side stress corrosion the licensee had continued to try to reduce stress levels within the tube sheet and in the "U" bend region by shot peening and annealing procedures. In addition, the Technical Specifications relating to steam generator tube inspections had been amended to recognize the differences in integrity of a tube based on the depth of a crack below the face of the tube sheet or below the top of the lowest hardroll of tube to tube sheet. A distance of 1.6 inches had been established as the minimum depth for this F* distance; i.e., a crack below this depth was to be considered less a hazard to safety than a crack within the F* distance. The inspector was informed that based on the F* analysis, the licensee had been forced to plug approximately 5% of the 4674 tubes in "B" steam generator and about half as many in each of the other steam generators.

During the recent refueling outage "C" steam generator was sludge lanced for the first time in three years. A relatively small amount of iron oxide (approximately 24 pounds) was removed, thus indicating chemistry control was continuing to prevent oxidation and wastage of carbon steel pipe in the low- and high-pressure regions of the power and steam conversion systems.

These exemplary conditions resulted, in part, from the effectiveness of the secondary coolant system in preventing ingress of corrosive impurities. The inspector also observed that the licensee had upgraded its inservice inspection program to minimize erosion/corrosion by macro- and micro-biological species in the raw service water and condenser cooling water. The inspector considered that chemistry was being controlled well because of increased experience of the chemistry staff, especially in the implementation of the Steam Generator Owners Group (SGOG) guidelines.

The inspector considered the return of the Plant Chemist to active participation on the chemistry staff to be a positive action taken during the past year. On the negative side, the inspectors were informed that, in addition to bypassing the condensate polishers when power level was greater than 50%, during the past year difficulties had been encountered in the use of these polishers during unit startup, primarily due to design difficulties that affected precoating schedules.

b. IE Notice 86-106

The inspector reviewed the actions being taken by the licensee in response to IEN 86-106 and supplements relative to the feedwater pipe rupture at the Surry Nuclear Station in December 1986. Upon receipt of this Notice the licensee had identified 115 fittings that were considered to be vulnerable to erosion/corrosion. However, after ultrasonically testing the thickness of these fittings all were found to be within mill tolerance. Two heater drain lines were replaced because of evidence of wear.

Plans were underway to revise the ISI program to include pipes in single phase (water) systems, so that during the ten-year program approximately 800 additional fittings, with multiple inspection areas and points, would be examined.