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SCE&G®
A SCANA COMPANY

October 27, 2004

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dear Sir/Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
60-DAY RESPONSE TO NRC GENERIC LETTER 2004-01
REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS

On August 30, 2004, the U.S. Nuclear Regulatory Commission (NRC) issued NRC Generic Letter 2004-01 to request that utilities provide information regarding steam generator (SG) tube inspections performed at their plant. Addressees were asked to provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if their inspection programs are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees were directed to provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the Technical Specifications (TS) in conjunction with Criteria IX and XI of 10CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.

Licensees were requested to provide a response within 60 days of issuance of the generic letter.

South Carolina Electric & Gas Company (SCE&G) acting for itself and as agent for South Carolina Public Service Authority, hereby submits the attached in response to the generic letter.

Should you have questions, please call Mr. Ron Clary at (803) 345-4757.

I certify under penalty of perjury that the foregoing is true and correct.

10/27/04
Executed on

Robert M. Fowlkes for
Jeffrey B. Archie
Vice President, Nuclear Operations

JT/JBA/dr
Attachment

c: N. O. Lorick
S. A. Byrne
N. S. Carns
T. G. Eppink (w/o Attachment)
R. J. White
W. D. Travers
K. R. Cotton
NRC Resident Inspector
K. M. Sutton
NSRC
RTS (0-C-04-2870)
File (815.14)
DMS (RC-04-0178)

A115

60-Day Response
Generic letter 2004-01

Addressees were requested to provide the following information to the NRC within 60 days of the date of this generic letter:

1. *Addressees should provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS in conjunction with Criteria IX and XI of 10CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.*

Response:

Steam Generator (SG) tube inspections performed at VC Summer Nuclear Station (VCSNS) are consistent with the NRC's position regarding tube inspections. The VCSNS Steam Generator Management Program complies with industry requirements outlined in NEI 97-06 and supporting EPRI guidelines.

The VCSNS Delta 75 Replacement Steam Generator has improved materials that include Type 405 stainless steel supports that are erosion corrosion resistant. The Delta 75 Steam Generator also incorporates design improvements such as Inconel 690 thermally treated tubing with the first 17 rows being heat treated, and a main feed ring designed with 34 flow nozzles that are designed to capture foreign material. The tubes are fully hydraulically expanded into the tube sheet.

Secondary side visual inspections were performed in the three Westinghouse Delta 75 replacement SGs at VCSNS during the October 2000 Refuel 12 refueling outage. Inspection objectives were to obtain visual information of corrosion, erosion, and deposits, and to inspect the structural condition of the SG secondary side components.

Visual inspection activities were performed in the following locations:

Upper Steam Drum Region, 9th Tube Support and u-bend Regions
Mid / Lower Steam Drum Region Flow Distribution Plate
Tubesheet and Lower Tube Bundle Regions

The A SG had a previously identified eddy current indication of a possible loose part at Rows 88,89 and Columns 62,63 from an earlier outage. The object was identified (a piece of wire ≈ 0.5 inches long) and removed with no indications present on any of the surrounding tubes after the part was removed. No evidence of additional loose parts was identified in the tube bundle through FOSAR (foreign object research and retrieval) inspections and eddy current, and no indication of loose part damage to SG tubing was observed. The wire was removed prior to the water lancing operation.

Water lancing was performed @ 1500 psi using a 0 to 40 degree interval rocking motion at a specified location for 1 to 2 minutes. The rocking motion enhanced the sludge removal operation while preventing tube wear and abrasion. The lancing process used at VCSNS has been tested and approved per report FANP 013051 (Lance Erosion and Vibration Tests), and the subsequent visual inspection indicated that the cleaning process was successful with well preserved tubing.

As stated above, the water lance operations were found to be effective in all three SGs. 28 pounds of sludge were removed from SG A, 40 pounds from SG B and 22 pounds from SG C. The dry sludge weights for the generators were 12 pounds, 16 pounds, and 12 pounds respectively.

Eddy Current results:

A SG – 100% of all in service tubes were examined full length using the standard Bobbin – coil technique.

B SG –100% of all in service tubes were examined full length using the standard Bobbin – coil technique. In addition to the bobbin exam a Hot Leg top of tubesheet exam was performed which included 322 tubes that were spun with a plus point probe.

C SG – 100% of all in service tubes were examined full length using the standard Bobbin – coil technique. A u-bend study was completed on 14 Row 1 tubes comparing a mid frequency plus point probe to a high frequency plus point probe. Details are provided below:

The inspection strategy for the small radius u-bends during the VCSNS Refuel 12 outage included a site validation of the eddy current technique. The validation involved a comparison to determine the similarity between the EPRI specimens and VCSNS tubing relative to background noise. Noise levels present in both data sets were measured and evaluated. The VCSNS and EPRI data were calibrated the same for an exact comparison. The calibration standards for both sets contained a 100% axial EDM notch to support a single method.

Based on the above, the variety of examination methods used at VCSNS for SG tubing is capable of detecting flaw types that may be present. Prior to each inspection, a degradation assessment is performed to identify flaws that may be present, and a technique validation assessment is performed to verify that the eddy current techniques are capable of detecting those flaw types identified in the degradation assessment.

2. *If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective actions, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the Attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tube sheet and where the extent of the inspection in the tube sheet region is limited*

Response:

Steam Generator tube inspections performed at VCSNS are consistent with the NRC's position regarding tube inspections. Therefore this question does not apply.

3. *For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a justification for continued operation based on maintaining tube structural and leakage integrity) that addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS where flaws have the potential to exist and inspection techniques capable of detecting these flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10CRF50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.*

Response:

Steam Generator tube inspections performed at VCSNS are consistent with the NRC's position regarding tube inspections. Therefore this question does not apply.