May 28, 2008

Mr. D. E. Grissette
Vice President
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Company, Inc.
P.O. Box 1295
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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 1 – SUMMARY OF CONFERENCE CALLS REGARDING THE SPRING 2008 STEAM GENERATOR TUBE INSPECTIONS DURING REFUELING OUTAGE 14

Dear Mr. Grissette:

On March 31, April 1, and April 9, 2008, the U.S. Nuclear Regulatory Commission (NRC) staff participated in conference calls with representatives of Southern Nuclear Operating Company (SNC, the licensee) regarding the on-going steam generator (SG) tube inspection activities at Vogtle Electric Generating Plant, Unit 1. The summary of these calls is attached as an enclosure. There are no follow-up actions required. The NRC appreciates SNC's support in this matter.

Please contact me at 301-415-2728 if you have any questions.

Sincerely,

/RA/

R. A. Jervey, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-424

Enclosure:
Summary of Conference Call

cc w/encl: See next page

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SUMMARY OF CONFERENCE CALLS WITH

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

REGARDING THE SPRING 2008 STEAM GENERATOR

TUBE INSPECTION RESULTS

On March 31, 2008, April 1, 2008, and April 9, 2008, the U.S. Nuclear Regulatory Commission (NRC) staff of the Division of Component Integrity participated in conference calls with Southern Nuclear Operating Company (SNC, the licensee) representatives regarding the ongoing steam generator (SG) tube inspection activities at Vogtle Electric Generating Plant, Unit 1 (Vogtle 1). A summary of these calls is provided below.

Vogtle Unit 1 has four Westinghouse Model F SGs. Each SG has 5,626 thermally treated Alloy 600 tubes with an outside diameter of 0.688 inches and a nominal wall thickness of 0.040 inches. The tubes are hydraulically expanded for the full-depth of the tubesheet at each end. The tubes are supported by stainless steel support plates with quatrefoil-shaped holes. The U-bend region of the tubes installed in Rows 1 through 10 was thermally treated after bending in order to reduce stress.

At the time of the March 31, 2008, and April 1, 2008, conference calls, tube inspections were still in progress. The conference call focused on inspections of the tubes in the tubesheet region and at the top of the tubesheet. A summary of the information provided during these calls is below:

- In SG 1, a couple of circumferential indications near the top of the tubesheet were detected. The licensee is still evaluating whether these indications are flaws or false positive indications. The licensee is following a process for dispositioning indications near the top of the tubesheet that the licensee implemented following a recent outage at Vogtle Electric Generating Plant, Unit 2 (Vogtle 2) where a tube pull indicated that indications near the top of the tubesheet may not represent flaws (i.e., they were false positive eddy current indications). The process includes inspecting these locations with a Ghent probe and a 3-coil delta probe.

- In SG 2, one axial indication near the tube end was detected.

- In SG 3, six tubes with axial indications near the tube end was detected.

- In SG 4, several circumferential indications were identified near the top of the tubesheet. As with the indications in SG 1, these indications are still being evaluated to determine if they represent flaws or whether they are false positives. One axial indication was detected in a tube in SG 4 at the expansion transition. (This indication was smaller in size than the axial indication detected (and plugged) during the last outage.)

Enclosure

- At the time of the March 31, 2008, conference call, there were two indications of wear at the anti-vibration bars that exceeded the repair criteria. One indication was in SG 1 and measured 40% through-wall. The other indication was in SG 4 and was greater than 40% through-wall.

- In SG 1, 2, 3, and 4, 100% of the tubes were being inspected at the top of the tubesheet. Near the tube end, a 25% sample of the tubes were being inspected.

Given the findings in SG 3, this sample was expanded to include 100% of the tubes. In SG 2, the indication discussed above was just found earlier in the day. As a result, the licensee was still evaluating whether additional inspections should be performed in that SG.

- All of the indications near the tube end are within the bottom 1-inch of the tube.

- If the circumferential indications near the top of the tubesheet are true flaws, the flaw lengths are small.

- All of the indications discussed above were on the hot-leg side of the SG. In addition, all of the indications near the top of the tubesheet initiated from the outside surface of the tube.

- No rotating probe examinations were performed at the tube ends in the cold-leg. The licensee's basis for not performing rotating probe examinations on the cold leg tube end was the low number of indications at the hot-leg tube end, the use of a urethane plug to expand the tubes near the tube end (rather than a mechanical roller such as the one used at Catawba where indications were found at the cold-leg tube end), and the small size of the indications on the hot-leg. The use of a urethane plug to tack expand the tubes is expected to result in lower residual stresses (and hence a lower susceptibility to stress-corrosion cracking) than a mechanical rolling technique. The tube end indications on the hot-leg were characterized as small in length and depth with the longest indication being approximately 0.26 inches. In addition, the licensee indicated that if there were large indications on the cold-leg, they may have been detected during the bobbin probe examinations which were performed in SGs 1 and 4.

- No detailed visual examinations were performed at the tube end.

On April 9, 2008, another conference call was conducted. The conference call focused on the licensee's removal of portions of two tubes for destructive examination. A summary of the information provided during the call is below:

- Portions of two tubes were to be removed for destructive examination. The removal included one tube with an axial indication near the top of the tubesheet and one tube with a circumferential indication. For the tubes being pulled, the expansion joint in the tubesheet was relaxed using a tungsten inert gas (TIG) relaxation process. The tubes were then to be cut below the 2nd tube support

plate on the hot-leg side of the steam generator. This portion of the tubes would then be pulled through the tubesheet and cut into segments of various lengths.

- The tube with the axial indication was located in row 11, column 62 (R11C62). The first four segments of this tube were removed from the SG as expected (which included approximately 34-inches of the tube); however, after the fourth segment of the tube was cut, the remaining portion of the tube sprang back into the tubesheet. An investigation into why this occurred was initiated.

- An eddy current probe was inserted into the cold-leg of the tube in R11C62; however the probe could not be inserted past the 7th support plate on the cold-leg side of the SG (i.e., it could not be inserted into the U-bend region of the tube). As a result of these findings, additional eddy current examinations were performed in the vicinity of R11C62. A total of 18 tubes were identified as being impacted as a result of the tube pull operation. Of these 18 tubes, three tubes could not pass an eddy current probe. This included the pulled tube and two tubes below the pulled tube (i.e., R9C62 and R10C62). The other tubes were in close proximity to other tubes. All of these tubes had a different eddy current signature than was present during the examinations performed on these tubes the prior week. A visual inspection of this region indicated that the tubes were in close proximity in the U-bend region and between the 6th and 7th tube support plate. The scope of the eddy current examinations discussed above included a one to two tube border around those tubes that were in close proximity (a two tube border was maintained in the direction where the damage was occurring).

- A video probe inspection was performed on the inside of the tube in R11C62. This inspection revealed minor scarring on the inside surface of the tube, but there was no location where the tube was cut. Since R11C62 was not cut below the 2nd tube support plate, the whole tube was being pulled through the tubesheet (rather than just the portion of the tube below the 2nd tube support plate). This had an affect on the neighboring tubes since R11C62 was being pulled into other tubes.

- The tubes that could not pass an eddy current probe would not permit the installation of a stabilizer through the U-bend region (a stabilizer is a wire cable installed inside the tube that prevents a tube that may sever from impacting a neighboring tube). As a result, the tubes surrounding these tubes were plugged and stabilized. A total of 31 tubes were scheduled to be plugged and stabilized. The 31 tubes included all of the tubes which were in close proximity to a neighboring tube. The U-bend stabilizers are 505-inches long and run from the hot-leg tube end through the 7th tube support on the cold-leg. The stabilizer ends between supports on the cold-leg.

- The three tubes which would not permit the passage of an eddy current probe will be plugged. Welded plugs will be used in the tube in R11C62 (i.e., the tube that was being pulled). Before plugging R11C62, the tube will be hardrolled into the tubesheet to prevent the tube from rotating and pulling out of the tubesheet. In addition, a 12-foot stabilizer will be installed in the tube in R11C62. The

stabilizer will have a sleeve-like device to further stiffen the tube. The stabilizer will extend approximately 1 foot above the 2nd tube support plate. A visual exam of the tube-to-tubesheet welds will be performed in the two tubes below R11C62 (i.e., the other two tubes that would not permit the passage of an eddy current probe). The licensee is evaluating whether the tubes will be plugged with welded plugs or mechanical plugs.

- At the time of the call, there was no indication that damage occurred at the anti-vibration bars or at the 7th tube support plate, but was still being evaluated. The licensee was working on a three dimensional analysis for why the tubes in close proximity were located below and slightly to the right of the tube that was being pulled. An analyses of the loads imposed on the 7th tube support plate was also being performed to ascertain whether the support could have been damaged. There are no forces from the tube pull operation currently on the 7th tube support plate. Based on eddy current data, the 7th tube support plate is in its normal position.

- The axial indication in R11C62 was removed for destructive examination.

- A root cause investigation is on-going; however, the forces permitted during the tube pulling operation may be too high. The forces used to pull R11C62 were approximately 11,000 pounds. No procedural limits were exceeded during the tube pulling operation. The tube with the circumferential indication was pulled (after verifying through visual examination that the tube was fully cut). It took 9,000 pounds of force to break the tube free from the tubesheet. After the expanded part of the tube was removed from the SG (approximately 21-inches), the remaining portion of the tube essentially fell out.

The NRC staff did not identify any issues that warranted immediate follow-up action during the conference call.