



UNITED STATES
NUCLEAR REGULATORY COMMISSION
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November 5, 2009

Mr. Mark J. Ajluni
Manager, Nuclear Licensing
Southern Nuclear Operating Company, Inc.
40 Inverness Center Parkway
P.O. Box 1295
Birmingham, Alabama 35201

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 1 - SUMMARY OF
CONFERENCE CALL REGARDING THE FALL 2009 STEAM GENERATOR
INSPECTIONS (TAC NO. ME2166)

Dear Mr. Ajluni:

On September 29, 2009, and October 2, 2009, the NRC staff participated in conference calls with representatives of Southern Nuclear Operating Company (SNC, the licensee) regarding the ongoing steam generator inspection activities at Vogtle Electric Generating Plant, Unit 1. A summary of the conference calls is enclosed.

Should you have any questions, please contact me at (301) 415-1864.

Sincerely,

A handwritten signature in black ink, appearing to read "Donna Wright".

Donna Wright, Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 050-424

Enclosure:
Summary of Conference Call

cc w/encl: Distribution via Listserv

SUMMARY OF CONFERENCE CALL REGARDING THE
FALL 2009 STEAM GENERATOR TUBE INSPECTION RESULTS

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

DOCKET NO. 50-424

On September 29, 2009, and October 2, 2009, the Nuclear Regulatory Commission (NRC) staff participated in conference calls with representatives of Southern Nuclear Operating Company (SNC, the licensee) regarding the ongoing steam generator (SG) inspection activities at Vogtle Electric Generating Plant (VEGP), Unit 1.

VEGP 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 September 29, 2009, and October 2, 2009, conference calls, SG inspections were still in progress.

On September 29, 2009, the following was discussed:

- No primary-to-secondary leakage was observed during the recently completed cycle; however, during the plant shutdown, there were a few radiation monitor alarms indicating the presence of activity on the secondary side of the plant. Water chemistry samples from SG 3 contained trace amounts of Cobalt-58 and Iodine-131. The leak rate was too small to measure. With static pressure from the water on the secondary side of SG 3, no leakage was observed on the primary side of the SG.
- No exceptions were taken to industry guidelines in the Fall 2009 refueling outage.
- A bobbin probe was used to inspect:
 - 100 percent of the tubes full length in SGs 2 and 3, with the exception of the U-bend region of the row 1 and 2 tubes,
 - The inservice tubes in SG 4 surrounding the area where tubes were plugged as a result of difficulties encountered in pulling a tube during the 2008 outage.
- A +Point™ probe was used to inspect:
 - The U-bend region of 50 percent of the row 1 and 2 tubes in each of the four SGs,
 - 100 percent of the tubes from 3 inches above to 3-inches below the top of the tubesheet (TTS) on the hot-leg side in each of the four SGs,
 - 35 percent of the tubes from 3 inches above to 3 inches below the TTS on the cold-leg side in SGs 2 and 3,
 - The overexpansions (OXP) and bulges (BLG) located in the portion of the tube between the TTS and 13.1 inches below the TTS in all 4 SGs. This sample was limited to approximately 35 percent of the tubes, but included 100 percent of OXPs and BLGs in SG 4 and almost 100 percent of the OXPs and BLGs in the other three SGs,

Enclosure

- 100 percent of the freespan dents and dings with bobbin voltage amplitudes greater than 2 volts in SGs 2 and 3, and
 - All indications in the U-bend region of the tube with bobbin voltage amplitudes greater than 2 volts in SGs 1 and 4.
- All tube plugs in all four SGs were visually inspected
 - At the time of the conference call, 25 tubes were identified with indications that would be plugged including one tube with a permeability variation, one tube with a restriction, 20 tubes with circumferential indications, two tubes with wear at an anti-vibration bar (AVB), and one tube with an axial indication in the U-bend. In SG 1, there were 12 tubes that would be plugged (10 with circumferential indications, one permeability variation, and one tube with a restriction). In SG 2, there were four tubes that would be plugged (two with circumferential indications and two with wear at an AVB). In SG 3, there were five tubes that would be plugged (four with circumferential indications, and one with an axial indication in the U-bend). In SG 4, there were four tubes that would be plugged (four with circumferential indications).
 - Many of the circumferential indications were located in tubes in low rows and high columns. All of these indications were near the TTS on the hot-leg side of the SG.
 - In SG 1, the tube with the restriction was located at row 44, column 60 (R44C60). The restriction was approximately 2.5-inches above the TTS on the hot-leg side of the SG. This tube would not pass a 0.560-inch or 0.540-inch rotating probe. Although a 0.500 inch probe was able to be pushed above the point of the restriction, when the probe was rotated for acquiring the eddy current data, it stopped rotating when it reached the point of the restriction. This location was last inspected in 2008 with a +PointTM probe. No possible loose parts (PLP) indications were observed in the tubes surrounding this location. A visual inspection of this region was scheduled to be performed the evening of September 29, 2009.
 - In SG 2, the wear indications that would be plugged were located in the tubes in R54C85 (46-percent throughwall) and R43C98 (43-percent throughwall).
 - In SG 3, an axially oriented crack-like indication was identified approximately 3.1 inches above the seventh tube support plate in the tube in R1C20. The bend radius for a row 1 tube is 2.2-inches. The indication was close to the apex of the tube on the extrados and was attributed to primary water stress corrosion cracking. The +PointTM voltage amplitude was 3.09 volts and the indication extended 32 degrees circumferentially. As a result of identifying this indication, the scope of the +PointTM examinations in the U-bend region was expanded to 100 percent of row 1 and row 2 tubes and 20 percent of row 3 tubes in SG 3. This is the first crack-like indication that has been observed in the U-bend region of a SG with thermally treated Alloy 600 tubes. In-situ pressure testing is planned for this tube.
 - Secondary side maintenance and inspections were in various stages at the time of the September 29, 2009 conference call:
 - Visual inspection of the regions where PLPs were identified was on-going.
 - Visual inspections of the upper internals were scheduled to be performed in all four SGs.

- Sludge lancing and foreign object search and retrieval was scheduled to be performed in all four SGs:
 - 4 pounds of sludge and one sludge rock were removed from SG 1.
 - Sludge lancing of SG 3 was nearly complete.
 - 2 pounds of sludge was removed from SG 4.
- Visual inspection of the area where a tube pull resulted in damaging several tubes revealed no indication of movement of the tubes.

During the September 29, 2009, conference call, the NRC staff questioned the adequacy of the scope of inspections in the U-bend region in SGs 1, 2, and 4.

On October 2, 2009, the following was discussed:

- With regards to the restriction in the tube (at 2.66-inches above the TTS) located in R44C60 of SG 1, no abnormal indications or damage were identified on the secondary side of the tube. On the primary side, there is most likely a scrape on the inside diameter of the tube as a result of the rotating probe motor. This scrape caused the probe to stop rotating. A decision was made to not in-situ pressure test this location/tube since the damage appears to be mechanical in nature on the inside diameter of the tube. This location was last inspected in 2008.
- The axially-oriented crack in the U-bend region of R1C20 in SG 3 is located next to a manufacturing indication. This indication has been present since the baseline inspection in 1986, and has not changed since it was last inspected in Fall 2003. No axial indication was present in 2003. The in-situ pressure test had not yet been performed.

Subsequent to these conference calls, the licensee informed the NRC staff that they would inspect the U-bend region of 100 percent of the row 1 and row 2 tubes in all four SGs. In addition, the licensee indicated that the tube passed in-situ pressuring testing. The amount of leakage was negligible under simulated normal operating conditions, approximately 0.002 gallons per minute (gpm) under simulated steam line break operating conditions, and approximately 0.09 gpm at three times the normal operating differential pressure.

The NRC staff did not identify any issues that warranted immediate follow-up action as a result of these interactions.

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Sincerely,

/RA/

Donna Wright, Project Manager
Plant Licensing Branch II-1
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