UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

June 18, 2009

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

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 1 - REVIEW OF THE 2008 REFUELING OUTAGE STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT (TAC NO. ME0213)

Dear Mr. Ajluni:

By letter dated October 17, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082911083), Southern Nuclear Operating Company, Inc., (the licensee) submitted information summarizing the results of the 2008 steam generator (SG) tube inspections performed at Vogtle Electric Generating Plant, Unit 1 (Vogtle 1). These inspections were performed during the 14th refueling outage (1R14). On April 16, 2009, the Nuclear Regulatory Commission (NRC) staff participated in a conference call with licensee representatives regarding the above mentioned SG tube inspections. A brief summary of the call is provided in this evaluation. In addition, the NRC staff summarized additional information discussed during conference calls held on March 31, April 1, and April 9, 2008, concerning the 2008 SG tube inspections at Vogtle 1 in a letter dated May 28, 2008 (ADAMS Accession No. ML081430126).

The NRC staff has completed its review of the report and concludes that the licensee provided the information required by their technical specifications and that no additional follow-up is required at this time. The NRC staff's review of the report is enclosed.

Sincerely,

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

Docket No. 50-424

Enclosure: Inspection Summary Report

cc w/encl: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

OFFICE OF NUCLEAR REACTOR REGULATION

REVIEW OF THE 2008 REFUELING OUTAGE STEAM GENERATOR

TUBE INSPECTION REPORT

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

DOCKET NO. 50-424

By letter dated October 17, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082911083), Southern Nuclear Operating Company, Inc., (the licensee), submitted information summarizing the results of the 2008 steam generator (SG) tube inspections performed at Vogtle Electric Generating Plant, Unit 1 (Vogtle 1) during refueling outage 14. On April 16, 2009, the Nuclear Regulatory Commission (NRC) staff participated in a conference call with licensee representatives regarding the above mentioned SG tube inspections. A brief summary of the call is provided in this evaluation. In addition, the NRC staff summarized additional information discussed during conference calls held on March 31, April 1, and April 9, 2008, concerning the 2008 SG tube inspections at Vogtle1 in a letter dated May 28, 2008 (ADAMS Accession No. ML081430126).

Vogtle 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 this inspection, the SGs had accumulated approximately 220.8 effective full power months (EFPMs) of operation. The SGs have operated approximately 86.8 EFPMs in the 90 EFPM sequential period.

The licensee provided the scope, extent, methods, and results of the Vogtle 1 SG tube inspections in the documents referenced above. In addition, the licensee described corrective actions (i.e., tube plugging), taken in response to the inspection findings. With the exception of the tubesheet region, the inspections were performed in SGs 1 and 4. The tubesheet region was inspected in all four SGs. The licensee removed two tubes for destructive examination.

The NRC staff has the following comments/observations as a result of reviewing the aforementioned submittals:

- Outside diameter stress corrosion cracking (ODSCC) was identified at the top of the tubesheet on the hot-leg side in all four SGs (11 tubes in total). All but one of these indications were circumferentially oriented.

- The licensee removed two tubes exhibiting ODSCC from SG 4 (row 12, column 98, and row 11, column 62) to characterize the morphology of the outside diameter degradation. The degradation modes were observed at the top of the tubesheet. The licensee reported that the specimens were removed successfully, but have not yet been destructively analyzed. On April 16, 2009, the licensee indicated during a conference call that the analysis of the pulled tubes was still in progress. If was further indicated that the final report would be submitted to the NRC staff in late summer of 2009. During the removal of the tube in row 11, column 62, the tube was not completely severed and surrounding tubes were consequently damaged. This occurred because the entire tube was being pulled, rather than just a portion, through the tubesheet. A total of 33 tubes were plugged to recover from this one tube pull.

- Primary water stress corrosion cracking was identified at the tube ends in SGs 2 and 3. Most of the tube end indications were located in row 1. On April 16, 2009, the NRC staff asked the licensee whether they had any insights on this trend. The licensee indicated that a root cause investigation is still ongoing. The licensee indicated that row 1 is near the stiffest portion of the SG since the divider plate runs beneath and between the hot and cold-leg of the row 1 tubes. The licensee is also looking at the heat treatment of these tubes.

- During a conference call on April 16, 2009, the licensee clarified that 100 percent of the dents greater than 2 volts in the U-bend region were inspected. The licensee further indicated that during one inspection outage, focus is placed on dents in the U-bend region and in the next inspection outage focus is placed on the dents in straight legs of the tubes. New dents or any dents that have grown are also inspected.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by the 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.

Date of Issuance: June 18, 2009.

June 18, 2009

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

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 1 – REVIEW OF THE 2008 REFUELING OUTAGE STEAM GENERATOR TUBE INSERVICE INSPECTION REPORT (TAC NO. ME0213)

Dear Mr. Ajluni:

By letter dated October 17, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML082911083), Southern Nuclear Operating Company, Inc., (the licensee) submitted information summarizing the results of the 2008 steam generator (SG) tube inspections performed at Vogtle Electric Generating Plant, Unit 1 (Vogtle 1). These inspections were performed during the 14th refueling outage (1R14). On April 16, 2009, the Nuclear Regulatory Commission (NRC) staff participated in a conference call with licensee representatives regarding the above mentioned SG tube inspections. A brief summary of the call is provided in this evaluation. In addition, the NRC staff summarized additional information discussed during conference calls held on March 31, April 1, and April 9, 2008, concerning the 2008 SG tube inspections at Vogtle 1 in a letter dated May 28, 2008 (ADAMS Accession No. ML081430126).

The NRC staff has completed its review of the report and concludes that the licensee provided the information required by their technical specifications and that no additional follow-up is required at this time. The NRC staff's review of the report is enclosed.

Sincerely,

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

Docket No. 50-424

Enclosure: Inspection Summary Report

cc w/encl: Distribution via Listserv

DISTRIBUTION:
Public
LPL2-1 R/F
RidsNrrDorlLpl2-1 Resource
RidsNrrPMVogtle Resource
RidsRgn2MailCenter (SShaeffer)
RidsNrrLASRohrer Resource
RidsOgcRp Resource
RidsNrrDciCsgb Resource (MGavrilas)
RidsAcrsAcnwMailCenter Resource
AObodoako, NRR
KKarwoski, NRR

ADAMS Accession No. ML091660259 NRR-106 *transmitted by memo dated

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/LA	NRR/CSGB/BC	NRR/LPL2-1/BC
NAME	DWright	SRohrer	MGavrilas	MWong
DATE	06/17/09	6/16/09	6/9/09*	06/18/09

OFFICIAL RECORD COPY