May 1, 2006

Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
Tennessee Valley Authority
6A Lookout Place
1101 Market Street
Chattanooga, Tennessee 37402-2801

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNIT 1 — SUMMARY OF THE STAFF'S REVIEW OF THE STEAM GENERATOR TUBE INSERVICE INSPECTION REPORTS FOR THE END-OF-CYCLE 13 REFUELING OUTAGE IN 2004 (TAC NO. MC8712)

Dear Mr. Singer:

By letter dated November 22, 2004, (Agencywide Documents Access and Management System Accession Number, ML043280625), Tennessee Valley Authority (TVA, the licensee) submitted the steam generator (SG) tube plugging report in accordance with Technical Specification (TS) Section 4.4.5.5.a. By letter dated February 15, 2005, (ML050550413), TVA submitted the 90-day inservice inspection summary report in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, Article IWA-6230. By letter dated October 20, 2005, (ML053050386), TVA submitted the 12-month SG inspection report in accordance with TS Section 4.4.5.5.b. By letter dated February 22, 2006 (ML060540483), TVA provided additional information concerning their SG tube inservice inspections. The Cycle 13 SG tube inservice inspections were the first SG tube inspections since SG replacement.

The Nuclear Regulatory Commission staff has completed its review of these reports and concludes that the licensee provided the information required by Sequoyah Nuclear Plant, Unit 1 TSs, and that no additional followup is required at this time. The staff's review of the reports is enclosed.

Sincerely,

/RA/

Douglas V. Pickett, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-327

Enclosure: Staff's Review

cc w/encl: See next page

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Mr. Karl W. Singer
Tennessee Valley Authority

SEQUOYAH NUCLEAR PLANT

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SUMMARY OF THE STAFF'S REVIEW

STEAM GENERATOR TUBE INSPECTION REPORTS

FOR THE END-OF CYCLE 13 REFUELING OUTAGE IN 2004

SEQUOYAH NUCLEAR PLANT, UNIT 1

TAC NO. MC8712

DOCKET NO. 50-327

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Sequoyah Nuclear Plant (SQN), Unit 1 has four steam generators designated Model 57AG that were fabricated by Doosan. All four SGs were inspected during the November 2004 refueling outage. The SG consists of 4983 tubes which have an outside diameter of 3/4-inch and a wall thickness of 0.043-inch. The tubes were hydraulically expanded into the tubesheet and are supported by several type 409 stainless steel, lattice grid tube supports. The U-bend portion of the tubes is supported by diagonal and vertical straps.

The licensee provided the scope, extent, methods, and results of SQN, Unit 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.

Of particular note from the inspections is that the licensee detected eleven wear indications in the area of the 2nd and 4th vertical straps. The largest indication had penetrated through 17 percent of the wall thickness. Although the tubes could have been left in service, all were preventively plugged. The licensee performed an evaluation that determined the likely cause and examined the probability of future wear indications. The most likely cause of the wear was identified as local variations in the clearance between the tubes and the vertical straps. The 2nd

and 4th vertical straps do not have lock bars for controlling the spacing between the straps; therefore, local variations in the clearance can occur (e.g., when the vertical strips were welded to an arch plate, the strips might have had local deviations in spacing from each other or might have deviated from a vertical orientation due to weld distortion). The licensee's evaluation also indicated that the wear rate for an indication would decrease as the tube-to-support contact area increases (i.e., volumetrically linear wear progression).

Based on a review of the information provided, the Nuclear Regulatory Commission (NRC) staff concludes that the licensee provided the information required by their TSs. In addition, the NRC staff concludes that there are no technical issues that warrant followup 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.

Principal Contributor: K. Karwoski

Date: May 1, 2006