June 29, 2005

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

SUBJECT: SEQUOYAH NUCLEAR PLANT, UNIT 2 — EVALUATION OF THE RESPONSE TO GENERIC LETTER 2004-01, "REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS" (TAC NO. MC4853)

Dear Mr. Singer:

On August 30, 2004, the U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2004-01, "Requirements for Steam Generator Tube Inspections." The purpose of GL 2004-01 was to obtain information that would enable the NRC staff to determine whether licensees' steam generator tube inspection programs comply with the existing tube inspection requirements (the plant Technical Specifications) in conjunction with Appendix B to Title 10 of the Code of Federal Regulations Part 50.

Licensees who concluded that their steam generator tube inspections have not been, or are not being, performed consistently with the NRC's position on the requirements in the Technical Specifications in conjunction with Appendix B, were requested to submit a safety assessment. As part of this safety assessment, licensees were to address whether their safety basis for limiting inspections within the tubesheet constitutes a change to the "method of evaluation" for establishing the structural and leakage integrity of the tube-to-tubesheet joint. The NRC staff requested this information since it was expected that licensees' safety bases relied on a mechanical expansion joint rather than the tube-to-tubesheet weld. Since the original tube-to-tubesheet joint was most probably designed by demonstrating that the stresses in the tube, weld, and tubesheet satisfy the allowable stress values in Section III of the American Society of Mechanical Engineers (ASME) Code (or other similar standard), the staff questioned whether the safety basis for limiting inspections relied on demonstrating that the expansion joint satisfied some criteria (e.g., minimum tube pullout load criteria, allowable leakage) beyond those specified in Section III of the ASME Code.

By letter dated October 29, 2004, Tennessee Valley Authority responded to GL 2004-01 for Sequoyah Unit 2. In your response, you conclude that the safety basis used to support your tube inspection practices does not constitute a change to the method of evaluation. This conclusion appears to be based, in part, on an assumption that the GL was implying that the selection of nondestructive evaluation techniques defines the limits of the reactor coolant pressure boundary. The GL's discussion of the original design basis, however, was related to the "safety analysis" performed by certain licensees to support a conclusion that flaws located a certain distance below the top of the tubesheet do not have any safety implications. This safety

basis relies on a mechanical interference fit between the tube and the tubesheet for establishing the tube-to-tubesheet joint (i.e., forming the reactor coolant pressure boundary).

However, for many plants (if not all), the original design of the steam generator gave no credit for this interference fit since the weld between the tube and the tubesheet ensured the integrity of the tube-to-tubesheet joint. In fact, the design rules (ASME Code, Section III) do not address the use of an interference fit for maintaining pressure boundary integrity. As a result, the staff questioned whether licensees were using a different method of evaluation for assessing the adequacy of the tube-to-tubesheet joint.

Although your response to the “method of evaluation" item did not focus on the staff's area of concern, we conclude that your overall response to the GL is acceptable, since you indicated that your tube inspection practices at Sequoyah Unit 2 are not consistent with the NRC staff position, and that this has been entered into your corrective action program. You also committed to submitting a license amendment to clarify your steam generator tube inspection practices in the tubesheet region. This amendment was submitted on December 2, 2004, and approved as Amendment No. 291 on May 3, 2005. This amendment achieved consistency with NRC’s position and established new tubesheet inspection requirements.

This letter, in conjunction with our letter to you dated February 14, 2005, concludes the staff’s activities associated with GL 2004-01 for the Sequoyah Nuclear Plant, Units 1 and 2. Please contact me at (301) 415-1364 if you have any questions.

Sincerely,

/RA/

Douglas V. Pickett, Senior Project Manager, Section 2
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-328

cc: See next page

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Douglas V. Pickett, Senior Project Manager, Section 2
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