Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379-2000

April 3, 1997

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of	)	Docket No. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING TECHNICAL SPECIFICATION CHANGE 96-07.

References:
1. NRC letter to TVA dated March 18, 1997, "Request for Additional Information - Technical Specification Change Request TS 96-07 for Sequoyah Nuclear Plant Units 1and 2 (TAC NOS. M95958 and M96599).
2. TVA letter to NRC dated March 27, 1997, on the above subject

In response to NRC questions contained in Reference 1, TVA provided answers to Questions 1, 4, and 5 in Reference 2. The enclosure to this letter provides revised responses to Part a and b of Question 1 as requested by NRC during a telephone call on April 2, 1997. These revised responses are being provided at this time to support concurrent NRC review of TS change 96-01, SQN Mark-BW Fuel Transition.

Please direct questions concerning this issue to Jim Smith at (423) 843-6672.

Sincerely,

R. H. Shell

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D030 1/1

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ENCLOSURE

Sequoyah Nuclear Plant

Revised Responses to Part a and b of Question 1

NRC letter to TVA letter dated March 18, 1997.

Additional information on NRC Q1a in response to questions asked via teleconference 4/2/97.

The RCS temperature is initialized at nominal conditions minus 4°F in the RELAP5 model to account for measurement uncertainty. The primary-to-secondary heat transfer coefficient is a function of fluid flow, steam generator tube dimensions, and fluid and structural thermal transport properties and is set by RELAP5. In order to achieve an initial RCS temperature at nominal conditions minus 4°F, therefore, the secondary heat sink temperature must be reduced from nominal by about 4°F. Since the heat sink is saturated this corresponds to a reduced secondary pressure. Upon transient initiation, a loss of load, the secondary pressure increases to the main steam safety valve setpoint which is independent of transient effect. By minimizing the secondary pressure initially, the heat sink temperature rises from a minimum value associated with the initial pressure to the established value associated with the safety valve setpoint pressure - a larger change in heat sink temperature than would be accomplished, given any other choice of initial RCS temperature. The reduction in primary-to-secondary heat transfer is maximized in this manner for the loss of electric load transient. A positive moderator temperature coefficient is assumed and maximizing the RCS heatup also serves to increase core power, presenting additional challenge to the pressurizer safety valves. The result of initializing RCS temperature at nominal conditions minus 4°F is a conservative primary heatup, a conservative resultant expansion of RCS fluid, and a conservative RCS pressurization.

Additional information on NRC Q1b in response to questions asked via teleconference 4/2/97.

Sequoyah Technical Specification Table 2.2-1 indicates a high pressurizer pressure setpoint of 2385 psig = 2400 psia. The FCF analysis uses a setpoint of 2460 psia to account for a measurement uncertainty as great as 60 psi. The loop uncertainty for the high pressurizer pressure trip setpoint instrumentation is 5.6% of instrument span. With a span from 1700 psig to 2500 psig, the loop uncertainty is equivalent to 44.8 psi. The Sequoyah FSAR, Section 15.1.2.2 quotes allowances for steady state fluctuations and measurement error of +30/-42 psi. These values include a dead band of 8 psi. Neglecting the dead band in the contribution to the actual control pressure measurement, the effective measurement error of (+30-8)/-(42-8), or +22/-34 psi. The pressure measurement error of -34 psi (the negative error produces a relatively delayed reactor trip for a loss of electric load transient) with the error in high pressurizer pressure trip setpoint, 44.8 psi, could be combined with the square root sum of the squares treatment as the errors are independent of each other. The combined error:

$$\text{error} = ((-34)^2 + (44.8)^2)^{1/2} = 56.2 \text{ psi}$$

The allowance in measurement uncertainty used by FCF in the modeling of the high pressurizer pressure trip for the loss of electric load analysis, 60 psi, is larger than the errors associated with the actual trip instruments in combination with measured pressurizer pressure error.