Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

JUN 11 1991

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

Gentlemen:

In the Matter of	)	Docket Nos. 50-327
Tennessee Valley Authority	)	50-328

SEQUOYAH NUCLEAR PLANT (SQN) - REGULATORY GUIDE (RG) 1.97 - DEVIATION 29 - MINIMUM FLOW FOR SQN'S SHIELD BUILDING (SB) STACK INSTRUMENTATION

Reference: TVA letter to NRC dated January 31, 1991, "Sequoyah Nuclear Plant (SQN) - Permanent Deviation From Regulatory Guide (RG) 1.97 - Shield Building (SB) Stack Instrumentation"

This letter provides NRC with a revision to SQN's RG 1.97 program. This revision is associated with a deviation (i.e., Deviation 29) that was previously submitted by the referenced letter. During an April 12, 1991, telecon between NRC Project Management and SQN's Site Licensing and Nuclear Engineering staffs, NRC requested that Deviation 29 be revised to lower the minimum SB stack flow for which RG 1.97 accuracy requirements would be satisfied to a flowrate that would be expected postaccident. TVA previously utilized a flowrate of 500 cubic feet per minute (cfm), which provided a margin above the expected postaccident flowrate (i.e., 200-300 cfm). It was also noted that actual values below 500 cfm would be conservative relative to offsite dose assumptions and/or calculations. In response to NRC's request, TVA revised Deviation 29 to establish 200 cfm as the minimum flowrate, which satisfies RG 1.97 accuracy requirements.

Enclosed is TVA's revised Deviation 29 that supersedes Deviation 29 previously provided in the reference letter. The revised deviation completes the information requested by NRC for review of SQN's RG 1.97 program.

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Please direct questions concerning this issue to D. V. Goodin at (615) 843-7734.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

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ENCLOSURE

DEVIATION 29

VARIABLES (105) and (27)

Shield Building (SB) Exhaust Flow Rate and Noble Gas Radiation Level

Deviation from Regulatory Guide (RG) 1.97 Guidance

Sequoyah Nuclear Plant's (SQN) maximum design accident flow through the SB exhaust is 18,700 cubic feet per minute (cfm), which includes an additional 10 percent flow from the combination of two emergency gas treatment system (EGTS) fans (rated at 4,000 cfm each) and one auxiliary building gas treatment system (ABGTS) fan (rated at 9,000 cfm). The range of indicated flow at SQN is 0-28,000 cfm where 28,000 cfm is the maximum flow expected with two containment purge fans exhausting during Mode 5 (cold shutdown) operations. RG 1.97, Revision 2, recommends a range of 0 to 110 percent (design) flow with overall system accuracies within a "factor of 2" over the full range of indicated flow. TVA recommends that the factor of 2 only be applied for flows between 200-28,000 cfm. The SB radiation monitoring instrumentation that has been installed at SQN will satisfy the RG 1.97 accuracy requirements (factor of 2) over the full range of indicated flow (0-28,000 cfm) with the exception of the low flow range. The inability to achieve the factor of 2 accuracy in this low flow range can be attributed to the inherent inaccuracy associated with measuring low velocities (i.e., approximately 0-200 feet per minute) in conjunction with the inaccuracy associated with the radiation monitoring equipment.

Justification

At SQN, the A-Train ABGTS is aligned to the Unit 1 SB stack while the B-Train is aligned to the Unit 2 SB stack. During accident conditions, both trains of EGTS and ABGTS will start. Both trains of EGTS will automatically align to the accident unit's SB stack. Given a single failure of the ABGTS aligned to the accident unit's SB stack, the total flow from the SB stack would then be the EGTS flow. Under steady-state conditions, after the initial drawdown of the SB annulus, the flow rate from the EGTS exhaust will remain essentially equal to the volume of air inleakage into the SB annulus as the system maintains a constant negative pressure of 0.5 inch of water. During surveillance testing of the EGTS, measured inleakage must be maintained below 500 cfm. TVA accuracy calculations indicate that the RG 1.97 required factor of 2 accuracy will be maintained on the positive or nonconservative side (indicated dose less than actual released dose). However, the instrumentation does not meet the RG 1.97 factor of 2 accuracy requirement on the negative or conservative side (indicated dose greater than actual released dose) below 180 cfm. However, for this inaccuracy, dose estimates would always be in the conservative direction and would be bounded in all cases.

To maintain some margin to the currently calculated lower flow limit at which the RG 1.97 accuracy requirements are met, TVA recommends that the factor of 2 required accuracy be applied to a lower limit of 200 cfm. Existing calculations have demonstrated that the 10 CFR 100 offsite dose limits are not exceeded based on the assumption of a maximum of 500 cfm air leakage into the SB (reference updated Final Safety Analysis Report Sections 15.5.3 and 6.2). With an inleakage less than 500 cfm, the SB annulus remains negative throughout the transient, thus allowing only filtered flow to exit the annulus area via the SB exhaust. As previously indicated, under steady-state conditions, the rate of inleakage will be approximately equal to the exhaust flow rate. Thus, a flow rate of less than or equal to 200 cfm may be assumed to be bounded by the 10 CFR 100 calculations.

In summary, even though the SB radiation monitoring equipment that has been installed at SQN is expected to satisfy the RG 1.97 accuracy requirements for indicated flows less than 200 cfm, a value of 200 cfm is considered to provide appropriate margin to the value currently calculated (180 cfm). It should be further noted that flows in this lower range also meet the factor of 2 accuracy requirement except in the conservative direction.