TENNESSEE VALLEY AUTHORITY

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JAN 31 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) - PERMANENT DEVIATION FROM REGULATORY GUIDE (RG) 1.97 - SHIELD BUILDING (SB) STACK INSTRUMENTATION

References:
1. TVA letter to NRC dated December 10, 1990, "Request for an Extension to Temporary Deviations from Regulatory Guide (RG) 1.97 - Shield Building Stack Instrumentation"
2. TVA letter to NRC dated November 11, 1990, "Temporary Deviation from Regulatory Guide (R.G.) 1.97 - Shield Building Stack Radiation Monitoring"
3. TVA letter to NRC dated May 7, 1990, "Regulatory Guide (RG) 1.97 - Finalized Program"

The purpose of this letter is to provide NRC with TVA's permanent deviation from the accuracy requirements of RG 1.97 for SQN's SB stack instrumentation. TVA's RG 1.97 program for SQN (Reference 3) currently contains 28 proposed deviations that are undergoing NRC review. The enclosed deviation for SQN's SB stack instrumentation is Deviation 29 and should be reviewed with the information contained in TVA's Reference 3 letter.

By Reference 2, TVA submitted two temporary deviations from RG 1.97 that resulted from unexpected calibration and reliability problems that were experienced on SQN's newly installed SB stack radiation and flow monitoring instrumentation. An extension for these temporary deviations was subsequently requested (Reference 1) because of questions concerning system accuracy. These deviations provided an acceptable alternative for SQN's postaccident monitoring capabilities for the interim period until it could be determined if the existing system could fully comply with the RG 1.97 requirements or whether a permanent deviation was necessary. TVA has now completed its evaluation of SQN's SB stack instrumentation and has determined that a permanent deviation from the accuracy requirements of RG 1.97 is appropriate. The enclosure provides the details regarding SQN's SB stack instrumentation capabilities and the justification for the deviation.

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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 (SQN) maximun 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) operation. 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 500-28,000 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 has been in the range between 200 and 300 cfm. TVA accuracy calculations indicate that the RG 1.97 required factor of 2 accuracy will be maintained unless SB exhaust flow drops below 180 cfm.

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 500 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 inleakage 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 500 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 500 cfm, a value of 500 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 will also produce lower doses.