ENCLOSURE 1

PROPOSED TECHNICAL SPECIFICATIONS FOR
SEQUOYAH NUCLEAR PLANT

UNITS 1 AND 2

TVA-SQN-TS-42

UHI Accumulator Water Level Setpoint and Tolerances

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume by verifying the boron concentration of the solution in the water-filled accumulator.

c. At least once per 18 months by:

1. Verifying that each accumulator isolation valve closes automatically when the water level in the water-filled accumulator is 82.1 $\pm$5.6 inches above the tank vendor working line. This corresponds to 87.1 $\pm$5.6 inches when corrected for the mass of cover gas.

2. Verifying that the total dissolved nitrogen and air in the water-filled accumulator is less than 80 SCF per 1800 cubic feet of water (equivalent to 5×10^{-5} pounds nitrogen per pounds water).

d. At least once per 5 years by removing the membrane installed between the water-filled and nitrogen bearing accumulators and verifying that the removed membrane bursts at a differential pressure of 40 $\pm$ 10 psi.

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ENCLOSURE 2

JUSTIFICATION FOR PROPOSED TECHNICAL SPECIFICATION
SEQUOYAH NUCLEAR PLANT
UNITS 1 AND 2

TVA-SQN-TS-42

Westinghouse was requested to investigate the possibility of expanding the volumetric delivery limits required of the upper head injection (UHI) system. Westinghouse subsequently reviewed the Sequoyah FSAR ECCS performance analysis and performed a sensitivity study to evaluate a widened set of limits on the allowable UHI water volume delivered for both units (refer to attachment 1).

Based on the review of the ECCS performance analyses and the sensitivity study, Westinghouse has provided documentation that an additional 50 cubic feet was calculated as acceptable to be included in the upper limit of the required Sequoyah UHI volumetric delivery envelop (from 1055 cubic feet to 1105 cubic feet).

As a result, Westinghouse has stated that the setpoint on the UHI accumulator differential pressure level switch can be revised, to achieve optimization, to 82.1 inches above the tank vendor working line (87.1 inches when corrected for the mass of cover gas). The corresponding maximum allowable level switch tolerance will be $\pm$ 5.6 inches of water column.

ATTACHMENT 1

WESTINGHOUSE NUCLEAR SAFETY EVALUATION

The limiting case break in the 1978 UHI Evaluation Model ECCS analysis presented in the Sequoyah FSAR is the C_D = 0.6 DECLG break with imperfect mixing of UHI water assumed in the vessel upper head. Compliance with regulatory limits were achieved for this case by reducing the allowable core peaking factor (FQ) to 2.237; no margin exists for this case. Minimizing the volume of UHI water delivered is conservative for imperfect mixing UHI LOCA cases. Since no margin exists, the lower bound value for UHI water volume delivery must remain at 900 cubic feet, the value employed in the FSAR C_D = 0.6 DECLG imperfect mixing case.

A complete spectrum of perfect mixing cases was analyzed for the Sequoyah FSAR. The limiting case with perfect mixing of UHI water assumed in the vessel upper head was the C_D = 0.6 DECLG. The calculated peak clad temperature (PCT) for this case is 2111 F at an FQ of 2.32 with a UHI delivered water volume of 1053 cubic feet. Using sensitivities appropriate to UHI plant perfect mixing cases, tradeoffs can be made among various input assumptions to justify increasing the maximum allowable UHI delivered water volume. Maximizing the value of UHI water delivered is conservative for perfect mixing UHI LOCA analyses. Consider the net PCT impact of the following changes to C_D = 0.6 DECLG perfect mixing case:

I. Increase UHI delivered water volume from 1053 to 1105 cubic feet:

$$52 \text{ cf} \left[\frac{2.1\,^{\circ}\text{F PCT}}{\text{cf UHI water}}\right] \simeq 110\,^{\circ}\text{F PCT increase}$$

II. Reduce FQ value to 2.237:

$$(2.32 - 2.237) \left[\frac{11\,^{\circ}\text{F PCT}}{.01\ \Delta\text{FQ}}\right] \simeq 90\,^{\circ}\text{F PCT decrease}$$

III. Remove 65°F in pellet temperature uncertainty, as approved by NRC:

$$(65\,^{\circ}\text{F pellet T}) \left[\frac{52\,^{\circ}\text{F PCT}}{165\,^{\circ}\text{F pellet T}}\right] \simeq 20\,^{\circ}\text{F PCT decrease}$$

By putting the limiting perfect mixing case from the Sequoyah FSAR on the same core input basis as the C_D = 0.6 DECLG imperfect mixing case, the PCT impact of increasing the UHI delivered water volume to 1105 cubic feet is offset, and the net PCT effect becomes nearly zero. Therefore, significant PCT margin remains to the regulatory limit of 2200°F for the C_D = 0.6 perfect mixing case, and the C_D = 0.6 imperfect mixing case remains limiting. Given that a Technical Specification FQ value of 2.237 is in force UHI delivered water volume limits of 900 cubic feet (minimum) and 1105 cubic feet (maximum) may be applied to the Sequoyah units in defining the UHI level switch repeatability criterion.

The FSAR ECCS performance analysis was extended when several cases were analyzed for Sequoyah Unit 1, Cycle 2 during 1982 using the 1981 UHI evaluation modes. Imperfect mixing cases therein were again based on the UHI water delivered volume of 900 cubic feet while the C_D = 0.8 DECLG perfect mixing case analyzed employed a UHI delivered water volume of 1049 cubic feet, and gave a calculated PCT of 1982°F. It is clear from the sensitivity of PCT to delivered UHI water volume that increasing the UHI water delivery upper bound to 1105 cubic feet is acceptable for the perfect mixing case analyzed because a large PCT margin remains. It is believed that the 1105 cubic feet water delivery upper limit can be accommodated by all perfect mixing DECLG break cases under the 1981 UHI evaluation model without exceeding the 2200°F regulatory limit on PCT at FQ = 2.237.