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U.S. Nuclear Regulatory Commission
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Gentlemen:

In the Matter of)
Tennessee Valley Authority)

Docket Nos. 50-327
50-328

SEQUOYAH NUCLEAR PLANT (SQN) - PERFORMANCE TESTING OF REACTOR RELIEF AND
SAFETY VALVES

Reference: TVA letter from J. A. Domer to E. Adensam, NRC, dated
March 18, 1985

Enclosed is an update to the referenced letter for SQN unit 2 as
requested in the NRC/TVA April 29, 1988 meeting. TVA will continue to
evaluate the effectiveness for unit 2 through compliance with the
technical specifications for reactor coolant system leakage.

If you have any questions, please telephone Kathy S. Whitaker at
(615) 870-7748.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

Original Signed By
R. L. Gridley

R. Gridley, Director
Nuclear Licensing and
Regulatory Affairs

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Enclosure

cc: See page 2

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ENCLOSURE

PERFORMANCE TESTING OF REACTOR RELIEF
AND SAFETY VALVES
SEQUOYAH (SQN) UNIT 2

The original design for SQN included water-filled loop seals on both the power-operated relief valves (PORV) and the safety/relief valves (S/RV). Reanalysis of the discharging piping loads after completion of the Electric Power Research Institute (EPRI) relief valve test program indicated that loads caused by the discharge of the loop seal slug were excessive. TVA decided to eliminate the PORV loop seals (by rerouting of the piping), to drain the S/RV loop seals, and to install steam trim in the S/RVs. These modifications were implemented on unit 1 during the refueling outage after fuel cycle 2. Subsequent to this modification on unit 1, high S/RV tail pipe temperatures were observed that were interpreted to indicate valve leakage past the seat. To eliminate the leakage, TVA reestablished the S/RV loop seals.

After evaluating the options available to resolve the issue, TVA implemented the changes (removing the PORV loop seals, draining the S/RV loop seals, and installing the steam trim in the S/RVs) on unit 2 during the refueling outage after fuel cycle 2. Modifications and additions were made to the supports on the discharge piping to reduce the S/RV flange loads in order to reduce the likelihood of valve seat leakage. As a contingency, modifications were installed to allow operation with a heated loop seal to reduce the magnitude of the slug discharge piping loads, heat tracing and insulation were installed on the loop seal to maintain elevated fluid temperatures; and supports on the discharge piping were added or modified to accommodate the slug discharge loads. The piping was qualified to loads predicted with the RELAPS/MOD1 and REPIPE computer codes. Seat leakage during startup necessitated the refilling of the loop seals.

In August 1985, SQN units 1 and 2 entered extended shutdowns. Unit 1 was nearing completion of the refueling outage at the end of fuel cycle 3, and unit 2 was in fuel cycle 3. During the extended shutdown, water trim was installed in the unit 1 and unit 2 S/RVs in keeping with the heated loop seal operation. During heatup of unit 2 after the extended outage, S/RV seat leakage and problems with the loop seal temperature control occurred. TVA then decided to reevaluate the options.

TVA now plans to operate unit 2 with drained loop seals and steam trim in the S/RVs. The piping was designed for a heated loop seal discharge and is more than adequate for the steam discharge. The piping has also been rigorously qualified to loads generated with RELAPS/MOD1 and REPIPE for discharge of steam from the S/RVs (without PORV actuation) and for steam discharge from the PORVs.

To eliminate the problems with valve seat leakage, supports have been modified to reduce the S/RV flange loads to within those specified by Crosby Valve and Gauge Company (the valve manufacturer). The valves have also been serviced and tested by Wyle Laboratories before installation.

