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

J. L. Wilson
Vice President, Sequoyah Nuclear Plant

June 18, 1992

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) - NRC INSPECTION REPORT NOS. 50-327, 328/92-06 - REPLY TO A NOTICE OF VIOLATION (NOV) 50-327/92-06

The enclosure contains TVA's response to Stewart D. Ebneter's letter to Mark O. Medford dated May 19, 1992, which transmitted the subject NOV. This violation deals with the inoperability of the Units 1 and 2 ice condenser lower inlet doors.

The event associated with this violation was previously reported in accordance with 10 CFR 50.73 by Licensee Event Report 50-327/92007. There are no new commitments associated with this response.

If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-8924.

Sincerely,

J. L. Wilson

J. L. Wilson

Sworn to and subscribed before me
this 18th day of June, 1992
Mary Catherine Munday
Notary Public
My Commission Expires 8-4-92

Enclosures
cc: See page 2

IE01

Enclosures
cc (Enclosures):
Mr. D. E. LaBarge, Project Manager
U.S. Nuclear Regulatory Commission
One White Flint, North
11555 Rockville Pike
Rockville, Maryland 20852

NRC Resident Inspector
Sequoyah Nuclear Plant
2600 Igou Ferry Road
Soddy-Daisy, Tennessee 37379

Mr. B. A. Wilson, Project Chief
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Enclosure

RESPONSE TO NRC INSPECTION REPORT
NOS. 50-327/92-06 AND 50-328/92-06
STEWART D. EBNETER'S LETTER TO MARK O. MEDFORD
DATED MAY 19, 1992

Violation 50-327/92-06

"Technical Specification 3.6.5.3 requires, in part, that the ice condenser inlet doors be operable when in MODES 1, 2, 3, and 4.

"Contrary to the above, on March 17 and 18, 1992 numerous ice condenser doors on both units were discovered to require force in excess of the torque values required for operability as specified in Technical Specifications 4.6.5.3.1.b.1 and 3. This condition resulted in the ice condenser system being in a degraded condition and could have existed for an extended period of time with both units operating in Mode 1.

This is a Severity Level III violation (Supplement I)."

Reason for the Violation

The subject event resulted from failure to install sealant material in some of the wear slab joints during initial construction over a decade ago. This provided an avenue for water intrusion to the floor assembly and resulted in upward wear slab movement upon freezing. While it is theorized that the condition may have been progressing slowly over time, this problem had not been previously identified at Sequoyah through normal inspection, maintenance, or testing activities.

Corrective Steps That Have Been Taken and Results Achieved

To restore operability to Units 1 and 2 lower inlet doors, a modification was performed to remove the lower "L-shaped" sheetmetal flashing and gasket that form the jam for the lower inlet doors. This removed the interference with the bottom of the doors and provided physical margin for wear slab growth without interference with the doors. A second modification was implemented to replace the insulation bags installed under the flashing with layers of Armaflex rubber insulation fixed in place with adhesive. This provided improved sealing of air-leakage paths and ensured retention under accident conditions. Following removal of the flashing and gasket described above, a pull-force surveillance test was successfully performed, verifying technical specification operability. The removal of the flashing and gasket provides acceptable configuration during power operation, but may require further alteration to support future outage maintenance activities.

Detailed walkdowns and inspections were performed to identify and assess impacts on interfacing components and to establish the baseline configuration for future monitoring. Specifically, a generalized walkdown and review of both the lower plenum area and the lower elevation below the ice condenser floors were performed to look for cracks, spalling, or other signs of distress. Floor assembly components and structural members were reviewed for corrosion and obvious deformation.

Various interfacing features (e.g., conduit) were evaluated for signs of distress or damage because of the slab movements. The turning vanes were inspected to assess if the floor had displaced to the point of contact with the vanes, if the bolting was deformed, and if the wear slab in contact with the vanes was cracked. Visual observations, review of configuration, and operating history were performed for the glycol floor piping to identify any evidence of damage and operational impacts. The 12-inch floor drains were inspected for deformation, and sealing joints were inspected for damage and consistency with the as-designed configuration.

In conjunction with the direct visual examinations, a boroscope was utilized to verify the absence of indications of excessive corrosion on the steel containment vessel in the vicinity of the affected ice condenser components. A boroscope was similarly utilized to inspect the exposed interior, floor-assembly passages of the floor drain for assessment of ice formation extent and location. A detailed elevation survey and crack-mapping of the wear slab were performed to document the present configuration.

From the above inspections, a 50.59 safety evaluation utilizing bounding evaluations was performed that verified the structural integrity of components necessary to ensure functional capability of the ice condenser system and acceptability of the existing configuration, relative to ice condenser operability. The structural slab evaluation consisted of the inspection described above, which did not identify any apparent cracking or areas of distress. The slab was evaluated for potential downward loading on the structural slab as a result of loading transmitted from wear slab and turning vane contact. The potential impacts were determined to be acceptable, relative to design loading and capacities. The dead weight impact of water and/or ice within the floor assembly was determined to be minimal. Wear slab evaluation concluded that the slab would maintain position during a seismic condition and that the existing deformation did not prevent it from protecting the glycol piping. No evidence of glycol piping damage was identified through conducted inspections and a review of ice condenser or glycol temperatures. Upward loads transmitted by the wear slab on column anchor bolts were also evaluated, and the potential impact on bolt capacity was found to be insignificant. The expansion joints prevent any loading on the columns themselves. Conservative bounding evaluation of potential loading on the turning vanes and associated bolting concluded that functionality would be maintained for Unit 1. On Unit 2, the turning vanes were moved to provide physical margin between the wear slab and the turning vanes. Voids and separation in the Unit 2 floor drains were sleeved to eliminate potential condensation paths.

To ensure that any potential further degradation does not impact operability, a periodic monitoring plan has been established for both units that consists of at-power monitoring of floor movement. Evaluation of monitoring results will determine appropriate changes in inspection scope or frequency. Several options are provided to minimize the as low as reasonably achievable impacts, including remote or upper containment

monitoring of wear slab displacement transducers for each bay. Lower plenum entry for inspection is provided as a back-up method. The monitoring instruction provides criteria for assessing inlet door operability impacts and conducting further engineering assessment to ensure the continued validity of the above-described evaluation. As a result of monitoring the floor slab, slight upward and downward movements have been observed. Although movement has been observed, it appears that the movement has currently reached equilibrium, with the exception of one bay on Unit 2. The trend on this bay indicates that the rate of movement is decreasing. The maximum movement observed is approximately 0.25 inch; the physical margin remaining for this area is approximately 2.50 inches. The minimum physical margin available for additional floor movement is approximately 0.94 inch.

The evaluations supporting the above-described actions were reviewed by the Plant Operations Review Committee. The overall evaluation was reviewed by the ice condenser designer and system performance specialist from Westinghouse Electric Corporation. The supporting structural evaluation was reviewed by an independent structural specialist.

Maintenance practices have been revised to include additional control and provisions to minimize water accumulation on the floor.

Corrective Steps That Will be Taken to Avoid Further Violations

Defrosting practices are being evaluated to determine the optimum frequency for defrosting and determine if the ice condenser floors should be defrosted. TVA will also continue to monitor floor movement and assess the phenomenon associated with movement of the floor.

/ aluation to determine the effectiveness of the corrective actions and additional corrective actions, if warranted, will be performed during the Unit 2 Cycle 6 refueling outage. TVA will continue to evaluate the feasibility of long-term floor repair alternatives as part of the effectiveness review.

Date When Full Compliance Will be Achieved

Sequoyah is in full compliance.