Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

April 9, 1998

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

Gentlemen:

In the Matter of	)	Docket Nos.	50-327 50-390
Tennessee Valley Authority	)		50-328

NUCLEAR REGULATORY COMMISSION (NRC) - SEQUOYAH NUCLEAR PLANT (SQN) AND WATTS BAR NUCLEAR PLANT UNIT 1 (WBN) - PLAN FOR ADDRESSING PART LENGTH CONTROL ROD DRIVE MECHANISMS (CRDM) POTENTIAL CRACKING

The Westinghouse Owners Group (WOG) identified 16 potentially affected domestic utilities with 30 units susceptible to part length CRDM cracking that was identified at Prairie Island. SQN and WBN were included in the listing. Enclosure 1 provides TVA's plan for addressing the part length CRDM cracking issue. It is submitted in response to the NRC request made during a meeting with WOG on February 27, 1998. The WOG Regulatory Response Group also recommended enhanced Reactor Coolant System leakage monitoring as an interim compensatory action for those units continuing to operate with part length CRDM housings. Enclosure 1 also addresses actions taken by TVA in response to the WOG recommendations. Enclosure 2 provides the commitment made in this letter.

If you have questions regarding the subject plan, please contact R. M. Brown at (423) 751-7228.

Sincerely,

Mark J. Burzynski
Manager
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Enclosures

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ENCLOSURE 1

PLAN FOR ADDRESSING PART LENGTH CONTROL ROD DRIVE MECHANISMS (CRDM) POTENTIAL CRACKING

A records search by Westinghouse has shown that 8 of the 30 units identified as being potentially affected are of a different weld joint configuration than that used at Prairie Island. The original fabrication records from the equipment manufacturer, Royal Industries, indicated that Inconel (alloy 82) was used as the filler material for the 403 to 304 stainless steel (ss) housing weld in these 8 units instead of the 309ss butter/308ss filler configuration which was installed at Prairie Island. The Sequoyah (SQN) and Watts Bar (WBN) units have the Inconel (alloy 82) configuration.

TVA has performed a preliminary assessment of Inconel (alloy 82) configuration relative to the 309ss butter/308ss filler configuration. Differences in the chemical, physical, and mechanical properties were evaluated for impact on susceptibility to hot cracking. The critical properties (e.g., coefficient of thermal expansion, ductility, and toughness) are more favorable for Inconel (alloy 82) weld joint configuration. The mechanical properties of Inconel (i.e., specifically ductility and toughness) should enhance the leak before break argument presented in the condition assessment which was also submitted to NRC by the Westinghouse Owners Group (WOG). Although it is recognized that Inconel (alloy 82) is not totally immune to hot cracking, its properties make it less susceptible to this phenomenon than the 309ss when proper welding practices and techniques are employed.

The part length CRDMs are Class 1 reactor coolant pressure boundary components that received appropriate non-destructive examinations (NDE) at the time of their initial fabrication. In addition, subsequent industry ultrasonic test inspections along with TVA's routine inspection of the Reactor Coolant System (RCS) for evidence of leakage have not identified any unanticipated flaws or defects.

As part of TVA's ongoing effort to re-verify the integrity of this process, TVA is working with WOG to identify how NDE inspections on part length housings on WBN Unit 2 and any additional spare part length housings which may be in TVA's inventory would support the industry effort. In addition, TVA will retrieve the original NDE and fabrication records and perform technical evaluations of these records relative to current inspection and fabrication requirements. This evaluation should reconfirm the integrity of the component and demonstrate the accuracy, adequacy, and completeness of the original NDE processes.[1]

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[1] TVA does not consider this corrective action a regulatory commitment. TVA's corrective action program will track completion of the action.

We expect that this evaluation will support continued operation without any additional inspections or modifications to operating units. Until this evaluation is completed, TVA will issue guidance to the Operations staff to heighten awareness and implement compensatory RCS leakage monitoring actions. Specifically, SQN and WBN will enhance RCS leak rate monitoring. Specifically, each shift will monitor for the following parameters:

1. Containment moisture.
2. Containment pressure.
3. Containment radiation levels.
4. Containment temperature.
5. Containment sump levels.

If any unexpected leakage is identified above the pre-established thresholds, then a team will be established to perform a more in-depth technical review to identify the source of leakage.

In addition, TVA will continue to follow industry initiatives addressing this issue and may further revise the outlined comprehensive approach based on the results of these initiatives.[1]

TVA believes that the data and evaluation to date suggests that the finding on the one-part length CRDM at Prairie Island is somehow related to a unique set of circumstances at that facility and that configurations at SQN and WBN are less susceptible to this phenomenon. This comprehensive approach will allow TVA to prioritize resources to address other ongoing technical and emergent issues and will minimize radiation exposure and dose to plant personnel to the extent practical.

TVA will provide an update on its plans to resolve this issue to NRC on or before August 7, 1998. This date is approximately 30 days prior to the next scheduled unit outage (SQN Unit 1).

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[1] TVA does not consider this corrective action a regulatory commitment. TVA's corrective action program will track completion of the action.

ENCLOSURE 2

COMMITMENTS MADE IN THIS LETTER

1. TVA will provide an update on its plans to resolve this issue to NRC on or before August 7, 1998.