



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

February 11, 1999

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

10 CFR 50.54(f)

Gentlemen:

In the Matter of) Docket Nos. 50-327 50-390
Tennessee Valley Authority) 50-326

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 AND SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 AND 2 - WBN'S RESPONSE TO NRC'S REQUEST FOR ADDITIONAL INFORMATION (RAI) DATED SEPTEMBER 25, 1998, AND SQN'S RESPONSE TO NRC'S RAI DATED DECEMBER 29, 1998, TO GENERIC LETTER (GL) 97-01, "DEGRADATION OF CONTROL ROD DRIVE MECHANISM NOZZLE AND OTHER VESSEL CLOSURE HEAD PENETRATIONS," DATED APRIL 1, 1997

This letter provides TVA's response to NRC's RAIs dated September 25, 1998 and December 29, 1998, which requested additional information pertaining to WBN's and SQN's 120-day responses to GL 97-01, respectively. The information that NRC requests is contained in the Nuclear Energy Institute's (NEI) generic response to NRC's RAI to GL 97-01 dated December 11, 1998. The enclosure to this letter provides a reference guide to facilitate linking the generic response in the referenced NEI document to NRC's corresponding question.

TVA is a member of the Westinghouse Owners Group, which has been working with other utility owners groups, such as Electric Power Research Institute and NEI in addressing the issues identified in this RAI response to GL 97-01. Additionally, TVA participated in the development of the generic industry response.

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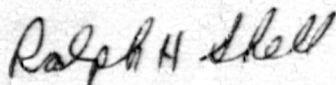
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This response contains no information or analysis required to be included in the UFSAR in accordance with 10 CFR 50.71(e). If you have questions regarding this response, please contact Terry Knuettel at (423) 751-6673.

Sincerely,



for
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ENCLOSURE

TENNESSEE VALLEY AUTHORITY

**WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 AND SEQUOYAH NUCLEAR
PLANT (SQN) UNITS 1 AND 2**

**WBN'S RESPONSE TO NRC'S REQUEST FOR ADDITIONAL INFORMATION
(RAI) DATED SEPTEMBER 25, 1998, AND SQN'S RESPONSE TO NRC'S
RAI DATED DECEMBER 29, 1998, TO GENERIC LETTER (GL) 97-01,
"DEGRADATION OF CONTROL ROD DRIVE MECHANISM (CRDM) NOZZLE AND
OTHER VESSEL CLOSURE HEAD PENETRATIONS," DATED APRIL 1, 1997**

INTRODUCTION

GL 97-01 was issued to request licensees to describe their program for ensuring the timely inspection of Pressurized Water Reactors (PWR) CRDMs and other vessel closure head penetrations. TVA's 120-day response to this letter for SQN and WBN was dated July 30, 1998. Subsequently, NRC issued RAIs on September 25, 1998 and December 29, 1998, to WBN and SQN, respectively. NRC states in both RAIs that they have reviewed TVA's responses to GL 97-01 and require further information to complete their review of TVA's responses as they relate to the Westinghouse Owners Group's (WOG) integrated program for assessing Vessel Head Penetration (VHP) nozzles at WOG member plants and to the contents of Topical Report No. WCAP-14901. This submittal provides TVA's response to NRC's RAIs issued to WBN and SQN.

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

Reference: David Modeen's (NEI) December 11, 1998 letter to Gus C. Lainas (NRC), "Responses to NRC Requests for Additional Information of Generic Letter 97-01"

TVA endorses this referenced NEI generic response to NRC's RAI on GL 97-01. To facilitate NRC's review, the following response will reference the specific section of NEI's generic response.

NRC Request:

1. In WCAP-14901, Westinghouse Electric Company (WEC) did not provide any conclusions as to what the probabilistic failure model would lead the WOG to conclude with respect to the assessment of primary water stress-corrosion cracking (PWSCC) in WEC-designed VHP penetrations. With respect to the probabilistic susceptibility model (e.g., probabilistic failure model) provided in WCAP-14901:

- a. Provide the susceptibility rankings compiled for the WOG member plants for which WCAP-14901 is applicable, include the basis for establishing the ranking of your plant(s) relative to the others.

TVA Response:

The susceptibility ranking for PWRs, including WOG members, is shown in the histogram contained in Enclosure 1 of the referenced NEI document. The basis for these rankings is also provided within Enclosure 1 of the referenced NEI document.

NRC Request:

- b. Describe how the probabilistic failure model in WCAP-14901 for assessing postulated flaws in VHP nozzles was bench-marked, and provide a list and discussion of the standards the model was bench-marked against.

TVA Response:

The response to NRC's Request 1.b above is contained in the referenced NEI document, Enclosure 2, page 2, Response 2.b to Question 2. That response explains how the model was benchmarked and the standards that were used in the model.

NRC Request:

- c. Provide additional information regarding how the probabilistic failure models in WCAP-14901 will be refined to allow the input of plant-specific inspection data into the model's analysis methodology.

TVA Response:

The response to NRC's Request 1.c above is contained in the referenced NEI document, Enclosure 2, page 3, response 3.b to Question 3. That response explains how plant-specific data is incorporated into the analysis.

NRC Request:

- d. Describe how the variability in product forms, material specifications, and heat treatments used to fabricate each CRDM penetration nozzle at the WOG member utilities are addressed in the probabilistic crack initiation and growth models described or referenced in Topical Report No. WCAP-14901.

TVA Response:

The response to NRC's Request 1.d above is contained in the referenced NEI document, Enclosure 2, page 1, response 1.b to Question 1. That response discusses how product form variability, material specifications, and heat treatments are incorporated into the analysis.

NRC Request:

2. Table 1-2 in WCAP-14901 provides a summary of the key tasks in WEC's vessel head penetration nozzle assessment program. The table indicates that the tasks for (1) Evaluation of PWSCC Mitigation Methods, (2) Crack Growth Data and Testing, and (3) Crack Initiation Characterization Studies have not been completed and are still in progress. In light of the fact that the probabilistic susceptibility models appear to be dependent in part on PWSCC crack initiation and growth estimates, provide your best estimate when these tasks will be completed by WEC, and describe how these activities relate to and will be used to update the probabilistic susceptibility assessment of VHP nozzles at your plant(s).

TVA Response:

The response to NRC's Request 2 above is contained in the referenced NEI document, Enclosure 2, page 4, question 5 response.

NRC Request:

3. In NEI's letter of January 29, 1998 (Reference 1), and April 1998 (Reference 2), NEI indicated that inspection plans have been developed for the VHP nozzles at the Farley Unit 2 plant in the year 2002 and the Diablo Canyon Unit 2 plant in the year 2001, respectively. The staff has noted that although you have endorsed the probabilistic susceptibility model described in WCAP-14901, Revision 0, other WOG member licensees have endorsed a probabilistic susceptibility model developed by an alternate vendor of choice. The WOG's proposal to inspect the VHP nozzles at the Farley Unit 2 and Diablo Canyon Unit 2 plants appear to be based on a composite assessment of the VHP nozzles at all WOG member plants. Verify that such a composite ranking assessment has been applied to the evaluation of VHP nozzles at your plant(s). If composite rankings of the VHP nozzles at WOG member plants have been obtained from the composite results of the two models, justify why application of the probabilistic susceptibility model described in WCAP-14901, Revision 0, would yield the same comparable

relative rankings of the VHP nozzles for your plant(s) as would application of the alternate probabilistic susceptibility model used by the WOG member plants not subscribing to WCAP-14901, Revision 0. Comment on the susceptibility rankings of the VHP nozzles at your plant(s) relative to the susceptibility rankings of the VHP nozzles at the Farley 2 and Diablo Canyon Unit 2 plants.

TVA Response:

Enclosure 1 of the NEI referenced document provides a discussion on how the results from the two different probabilistic models were used to determine comparative rankings. As can be seen in the histogram of Enclosure 1, SQN Units 1 and 2 and WBN Unit 1 are in the third grouping of plants. Farley Unit 2 is in the first grouping of plants, and Diablo Canyon Unit 2 is in the second grouping, as shown in Enclosure 1 of the referenced NEI document. These plants will have performed inspections before SQN and WBN are susceptible. TVA is participating in WOG efforts in this area, which include monitoring and evaluating the plant rankings, as appropriate.