

July 24, 2000

Mr. J. A. Scalice  
Chief Nuclear Officer and  
Executive Vice President  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 - REQUEST FOR ADDITIONAL  
INFORMATION REGARDING STEAM GENERATOR ALTERNATE REPAIR  
CRITERIA FOR AXIAL OUTSIDE DIAMETER STRESS CORROSION  
CRACKING (TAC NO. MA8635)

Dear Mr. Scalice:

By letter dated April 10, 2000, Tennessee Valley Authority (licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC), proposed Technical Specification (TS) change WBN-TS-99-014 for the Watts Bar Nuclear Plant, Unit 1 (WBN). The proposal was to change the TSs for WBN to provide an alternate 1.0 volt repair criterion for axial outside diameter stress corrosion cracking.

The NRC staff has reviewed the WBN submittal, and has identified additional information, as discussed in the enclosure, that is needed to complete its review. Based on discussions with your staff on July 17, 2000, we understand that your response to this request can be submitted on a timely schedule to support the staff's review prior to the next refueling outage.

Sincerely,

***/RA/***

Robert E. Martin, Senior Project Manager, Section 2  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-390

Enclosure: Request for Additional Information

cc w/enclosure: See next page

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**REQUEST FOR ADDITIONAL INFORMATION**  
**ALTERNATE REPAIR CRITERIA FOR STEAM GENERATORS**  
**WATTS BAR NUCLEAR PLANT, UNIT 1**

1.0 INTRODUCTION

By letter dated April 10, 2000, the Tennessee Valley Authority (TVA) submitted for staff review an amendment to implement alternate repair criteria (ARC) for degraded steam generator tubes in the Watts Bar Nuclear plant (WBN) technical specifications (TS). The proposed alternate repair criteria follow NRC Generic Letter 95-05, "Voltage-Based Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking." After a preliminary assessment of TVA's accident dose calculations and the staff's independent calculation of the consequences of a Main Steamline Break (MSLB) accident, the staff requests the additional information identified below. The staff notes that it is continuing to assess TVA's calculation of the atmospheric dispersion factors for the control room for a MSLB and any needed additional information for that topic will be identified at a later date.

The preliminary results of the staff's assessment of the methodology utilized by TVA to support the ARC amendment appears to be unique and quite varied from the existing Standard Review Plan (SRP) and industry guidance. At present, the staff finds TVA's methodology unacceptable without further amplification and justification. The following reflects some of the staff's comments relative to the TVA calculations.

1. The calculations in WBNAPS3-077 are based upon reactor coolant activity levels from ANSI/ANS-18.1-1984. It would appear that the calculations should have been based upon the values in Final Safety Analysis Report Table 11.1-2 or the values in Table 11.1-2 needed to be changed to incorporate the ANSI/ANS-18.1-1984 values. Utilization of the ANSI values underestimates the quantity of each iodine isotope in reactor coolant relative to the existing values of Table 11.1-2.
2. The calculations to determine secondary side activity following a year of normal operation accounting for steam generator blowdown and other removal mechanisms seems unnecessary and inconsistent with the guidance in the SRP for the MSLB. In the assessment of the consequences, the starting point for the analysis should be the assumption that the secondary side activity in the steam generators is at the technical specification value, which is typically 0.1  $\mu\text{Ci/g}$ . TVA's conclusion on page 10 of WBNAPS3-077, that because the secondary coolant activity level eventually becomes equal to or greater than 0.1  $\mu\text{Ci/g}$  meets the intent of the SRP, is erroneous and a misapplication of the SRP assumptions.
3. It appears that TVA's MSLB analysis only involved the analysis of one case. To the pre-existing spike case of 60  $\mu\text{Ci/g}$  was incorporated an accident initiated spike which resulted in a release rate of activity to reactor coolant which was based upon the ANSI/ANS -18.1-1984 activity levels in reactor coolant. This too is contrary to the guidance in the SRP which involves assessing two cases. Based upon those two cases, a determination is made as to which case is limiting. The two cases to be evaluated include the pre-existing spike case with reactor coolant activity level at

**Enclosure**

60  $\mu\text{Ci/g}$  of dose equivalent  $^{131}\text{I}$  and the accident-initiated spike case where reactor coolant level activity is at 1  $\mu\text{Ci/g}$  with a spiking factor resulting in release rate 500 times the release rate necessary to maintain reactor coolant activity level at 1  $\mu\text{Ci/g}$ . The assessment which was performed for Watts Bar seems to be a hybrid of these two cases and one which may be overly conservative and burdensome especially if the steam generators continue to degrade. Utilization of TVA's methodology in the future may be limited and future increases in accident-induced leakage for the MSLB would most likely require a change in methodology. Application of a more common calculation methodology might best be performed now.

4. In the TVA calculation the release of steam from the faulted steam generator for the first 30 minutes, the entire contents of the steam generator were released when the steamline breaks, which is the appropriate assumption. However, it appeared that TVA assumed that the radioactivity of the steam released was at the activity level of the primary coolant associated with the primary to secondary leak rather than being associated with the secondary coolant at the technical specification value of 0.1  $\mu\text{Ci/g}$ . If the staff's assessment is accurate, this assumption results in a very conservative prediction of the consequences of a MSLB accident.
5. Ignoring the removal of iodine from reactor coolant via decay results in a lower value for the production rate of the various iodine isotopes and is inappropriate in determining release rates associated with the spiking factors.
6. The basis for the removal rate value of 0.0678/hr needs to be provided.

Mr. J. A. Scalice  
Tennessee Valley Authority

## WATTS BAR NUCLEAR PLANT

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