Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

MAY 0 6 1998

TVA-WBN-TS-97-008 10 CFR 50.90

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

Gentlemen:

In the Matter of) Docket No. 50-390
Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) - UNIT 1 - TECHNICAL SPECIFICATION (TS) CHANGE NO. 97-008 - HEAT FLUX HOT CHANNEL FACTOR - REPLACE THE TWO PERCENT PENALTY FACTOR WITH A BURNUP DEPENDENT FACTOR IN THE CORE OPERATING LIMITS REPORT (COLR)

In accordance with the provisions of 10 CFR 50.90, TVA is submitting a request for an amendment to WBN's license NPF-90 to change the TSs for Unit 1. The proposed amendment would replace the two percent penalty addressed in surveillance requirement (SR) 3.2.1.2(a) with a burnup-dependent factor to be specified in the WBN COLR.

TVA has determined that there are no significant hazards considerations associated with the proposed change and that the change is exempt from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). The WBN Plant Operations Review Committee and the WBN Nuclear Safety Review Board have reviewed this proposed change and determined that operation of WBN Unit 1 in accordance with the proposed change will not endanger the health and safety of the public. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and enclosures to the Tennessee State Department of Public Health.

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Enclosure 1 to this letter provides the description and evaluation of the proposed change including TVA's determination that the proposed change does not involve a significant hazards consideration, and is exempt from environmental review. Enclosure 2 contains copies of the appropriate TS pages from Unit 1 marked-up to show the proposed change. Enclosure 3 forwards the revised TS pages for Unit 1 which incorporate the proposed change.

NRC has previously approved an amendment similar to this one for TVA's Sequoyah Nuclear Plant. TVA requests that NRC approval be approximately 30 days prior to beginning WBN's refueling outage currently scheduled for early 1999, and that the revised TS be made effective within 30 days of NRC approval.

If you have any questions about this change, please contact me at (423) 365-1824.

Sincerely,

P. L. Pace
Site Licensing Manager

Enclosures
cc: See page 3

Subscribed and sworn to before me
on this 6th day of May, 1998.

E. Jeannette Long
Notary Public

My Commission Expires June 27, 2001

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cc (Enclosures):

NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. Robert E. Martin, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth St., SW,
Suite 23T85
Atlanta, Georgia 30303

Mr. Michael H. Mobley, Director
Div. of Radiological Health
3rd Floor
L & C Annex
Nashville, Tennessee 37243

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT (WBN)
UNIT 1
DOCKET NO. 50-390

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE TS-97-008
DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

I. DESCRIPTION OF THE PROPOSED CHANGE

The proposed amendment would revise Watts Bar Nuclear Plant (WBN) TS Surveillance Requirement (SR) 3.2.1.2(a) to replace the two percent penalty factor for $F_Q^W(Z)$ with a cycle specific, burnup-dependent factor in the Core Operating Limits Report (COLR). Specifically, the following changes are being proposed:

1. SR 3.2.1.2(a) and its associated BASES will have the phrase "by a factor of 1.02" deleted and replaced with the phrase "by the appropriate factor specified in the COLR."

2. TS Section 5.9.5(b)(3) would be updated to reference the revised WCAP (10216-P-A, Revision 1A, 1994) that details the analytical methods utilized for the new penalty factor.

Enclosure 2 provides a markup illustrating the above changes.

II. REASON FOR THE PROPOSED CHANGE

The current Technical Specifications apply a two percent penalty to the burnup-dependent heat flux hot channel factor, $F_Q^W(Z)$, when the peak steady-state hot channel factor, $F_Q^C(Z)$ (obtained from flux mapping), has increased since the last measurement. This penalty was originally based on a Westinghouse Electric Corporation assumption that the peak $F_Q^C(Z)$ would not change more than two percent over a burnup interval of 31 effective full power days (EFPD). Recent changes in Westinghouse core designs have resulted in this assumption now being non-conservative. These core design changes include low leakage loading patterns, 18-month cycles, high amounts of burnable poisons, and changes in burnable poisons such as the introduction of integral fuel burnable absorber (IFBA). In the last few years, some Westinghouse core designs have experienced increases in the measured value of $F_Q^C(Z)$ as high as six percent between monthly measurements over certain burnup ranges. To address this issue, Westinghouse submitted to NRC Revision 1 of WCAP 10216-P, "Relaxation of Constant Axial Offset Control - $F_Q(Z)$ Surveillance

Technical Specification," which was approved by NRC on November 26, 1993. The revised WCAP incorporates minor methodology changes to account for $F_Q^C(Z)$ increases of greater than two percent between monthly surveillances.

III. SAFETY ANALYSIS

During normal operation, $F_Q(Z)$, as approximated by $F_Q^C(Z)$ and $F_Q^W(Z)$, is shown to be within its limits specified in the COLR by performing periodic measurements. Since the $F_Q^C(Z)$ surveillance is required when power has been increased by $\geq$10 percent of rated thermal power from the previous surveillance, or at least every 31 EFPD, the SR addresses the possibility that $F_Q^C(Z)$ may increase between surveillances. The SR requires that when performing the surveillance, the resulting maximum $F_Q^C(Z)$ value must be compared to the maximum $F_Q^C(Z)$ determined from the previous surveillance. If the maximum $F_Q^C(Z)$ has increased since the previous determination of $F_Q^C(Z)$, the SR allows two options: the current $F_Q^W(Z)$ must be increased by an additional two percent to account for further increases in $F_Q^C(Z)$ before the next surveillance and reverified to be within limits, or the surveillance period must be reduced to every seven EFPD.

The $F_Q^W(Z)$ penalty of two percent was based on the Westinghouse assumption that the peak $F_Q^C(Z)$ would not change more than two percent between monthly flux maps. This assumption was based on previous core designs that predate the low leakage loading patterns, 18-month cycles, high amounts of burnable poisons, and use of IFBA, typical of recent cores. In the last few years, some Westinghouse core designs have experienced increases in the measured value of the heat flux hot channel factor, $F_Q^C(Z)$ as high as six percent between monthly measurements over certain burnup ranges. To address this issue, Westinghouse submitted to NRC Revision 1 of WCAP 10216-P, "Relaxation of Constant Axial Offset Control - $F_Q(Z)$ Surveillance Technical Specification." For those cores that are predicted to have larger increases in $F_Q(Z)$ (greater than two percent) over certain burnup ranges, the WCAP provides for a larger penalty on a cycle-specific basis. The NRC staff has determined that this methodology for accounting for the additional $F_Q(Z)$ penalty, including the relocation of the penalty to the COLR, is acceptable, and approved WCAP-10216-P on November 26, 1993. The staff's conclusions are documented in WCAP-10216-P-A, Revision 1A, February 1994.

Beginning with WBN Unit 1, Cycle 3, WBN will implement the new methodology addressed by WCAP-10216-P-A, Revision 1A. The burnup-dependent penalty will be included in the cycle-specific COLR as a replacement to the standard value of two percent in the current TS. The penalty will be presented in tabular form specifying the values, at specific burnups, that are in excess of two percent. At all other burnups, the COLR will indicate that the standard two percent penalty will still apply. Use of this NRC-approved methodology to establish values for the cycle-specific parameter will ensure that operation of WBN is consistent with the design bases and safety limits.

TVA notes that the proposed change was not required for WBN Unit 1, Cycle 1 or Cycle 2. For Cycle 1, a Westinghouse review of the WBN depletion characteristics had determined that the maximum increase in the steady state $F_Q^C(Z)$ with burnup would be less than two percent. Therefore, the current WBN TS $F_Q(Z)$ surveillance was found to be valid for Cycle 1. For Cycle 2, the predicted $F_Q^C(Z)$ increased more than two percent per 31 EFPD for some burnups. Therefore, the portion of the penalty factor greater than two percent was included in the burnup dependent, cycle specific W(Z) factor specified in the COLR using the methodology discussed in WCAP-10216-P-A Revision 1A. Use of the standard methodology presented here is preferred for Cycle 3 and beyond.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TVA has concluded that operation of Watts Bar Nuclear Plant (WBN) Unit 1 in accordance with the proposed change to the technical specifications does not involve a significant hazards consideration. TVA's conclusion is based on its evaluation, in accordance with 10 CFR 50.91(a)(1), of the three standards set forth in 10 CFR 50.92(c).

A. The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change involves only the manner in which the penalty factors for $F_Q(Z)$ would be specified (i.e., burnup-dependent factor specified in the Core Operating Limits Report [COLR] versus a constant factor specified in the TS). This is simply used to account for the fact that $F_Q^C(Z)$ may increase between surveillance intervals. These penalty factors are not assumed in any of the initiating events for the accident analyses. Therefore the proposed change will have no effect on the probability of any accidents previously evaluated. The penalty factors specified in the COLR will be calculated using NRC-approved methodology and will continue to provide an equivalent

level of protection as the existing TS requirement. Therefore, the proposed change will not affect the consequences of any accident previously evaluated.

B. The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not involve a physical alteration to the plant (no new or different kind of equipment will be installed) or alter the manner in which the plant would be operated. Thus, this change does not create the possibility of a new or different kind of accident from any previously evaluated.

C. The proposed amendment does not involve a significant reduction in a margin of safety.

The proposed change will continue to ensure that potential increases in $F_Q^C(Z)$ over a surveillance interval will be properly accounted for. The penalty factors will be calculated using an NRC-approved methodology. Therefore, the proposed change will not involve a reduction in margin of safety.

V. ENVIRONMENTAL IMPACT CONSIDERATION

The proposed change does not involve a significant hazards consideration, a significant change in the types of or significant increase in the amounts of any effluents that may be released offsite, or a significant increase in individual or cumulative occupational radiation exposure. Therefore, the proposed change meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), an environmental assessment of the proposed change is not required.