

WBN-TS-05-10

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U.S. Nuclear Regulatory Commission  
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Enclosure

cc (Enclosure):

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## ENCLOSURE

### WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 TECHNICAL SPECIFICATION CHANGE REQUEST WBN-TS-05-10 STEAM GENERATOR TUBE INTEGRITY - TSTF-449, REVISION 4

TVA submitted an application for an amendment to revise the WBN Unit 1 Technical Specification (TS) to be consistent with Technical specification Task Force (TSTF) Traveler, TSTF-449, Revision 4, "Steam Generator Tube Integrity," by letter dated December 15, 2005. TVA supplemented that application by a response to a request for additional information dated June 12, 2006. NRC subsequently submitted a request for additional information dated August 10, 2006. TVA's response to that request is provided below:

#### **NRC QUESTION**

Tennessee Valley Authority's letter dated June 12, 2006, responded to the staff's Request for Additional Information concerning proposed changes to the Watts Bar Technical Specification related to steam generator tube integrity. In the response to Question 2, the licensee indicated that the second sentence in the accident induced leakage performance criteria was consistent with the Watts Bar design and licensing basis; therefore, the original proposed wording was adequate. Although the wording may be consistent with the design and licensing basis, the second sentence in the accident induced leakage performance criteria in TSTF-449 is not intended to be an interpretation of the current design and licensing basis. Rather, the second sentence (in the accident induced performance criteria in TSTF-449) is intended to ensure that the potential for induced leakage during severe accidents will be maintained at a level that will not increase risk. This is discussed in the staff's generic safety evaluation of TSTF-449.

As a result, the staff requests the licensee to discuss its plans to modify its proposal to be consistent with TSTF-449 or justify why only a limit on the "faulted" steam generator is considered necessary to maintain risk at acceptable levels during the severe accident scenarios discussed in the staff's generic safety evaluation of TSTF-449.

#### **RESPONSE**

The allowable accident leakage of one gallon per minute (gpm) per steam generator stated in TSTF-449, Revision 4 is not supported in the WBN accident dose analysis. TVA interprets "one gpm per steam generator" to allow a total of four gpm leakage post accident. TVA is analyzed for a one gpm leak in the faulted steam generator and 150 gallons per day (gpd) in the three unfaulted steam generators. A one gpm leak per steam

generator would result in a significant increase in the calculated off site and main control room doses for several calculations. TVA has discussed the following wording with NRC and has found these words to be acceptable.

*"For design basis accidents that have a faulted steam generator, accident induced leakage is not to exceed 1.0 gallon per minute (gpm) for the faulted steam generator and 150 gallons per day (gpd) for the non-faulted steam generators. For design basis accidents that do not have a faulted steam generator, accident induced leakage is not to exceed 150 gpd per steam generator."*

TVA has added the words above in the proposed WBN Technical Specification 5.7.2.12, page 1 of Insert A in Enclosure 2 of TVA's letter dated June 12, 2006. This revised page is provided in the attachment to this enclosure.

ENCLOSURE 1  
ATTACHMENT

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1  
TECHNICAL SPECIFICATION CHANGE REQUEST WBN-TS-05-10  
STEAM GENERATOR TUBE INTEGRITY - TSTF-449, REVISION 4

## INSERT A

### 5.7 Procedures, Programs, and Manuals (continued)

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#### 5.7.2.12 Steam Generator (SG) Program

A Steam Generator Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the Steam Generator Program shall include the following provisions:

- a. Provisions for condition monitoring assessments. Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected or plugged, to confirm that the performance criteria are being met.
- b. Performance criteria for SG tube integrity. SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.
  1. Structural integrity performance criterion: All in-service steam generator tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, cooldown, and all anticipated transients included in the design specification) and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary-to-secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary-to-secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.
  2. Accident induced leakage performance criterion: The primary-to-secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. **For design basis accidents that have a faulted steam generator, accident induced leakage is not to exceed 1.0 gallon per minute (gpm) for the faulted steam generator and 150 gallons per day (gpd) for the non-faulted steam generators. For design basis accidents that do not have a faulted steam generator, accident induced leakage is not to exceed 150 gpd per steam generator.**
  3. The operational leakage performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."
- c. Provisions for SG tube repair criteria. Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.
- d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube repair criteria. The tube-to-tubesheet weld is not part of the tube. In addition to meeting the requirements of d.1, d.2, and d.3 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. An assessment of degradation shall be performed to determine the type and