

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

September 29, 2009

10 CFR 50.90

NC37 NRR

U.S. Nuclear Regulatory Commission ATTN: Document Control Desk Washington, D. C. 20555-0001

> Sequoyah Nuclear Plant, Unit 2 Facility Operating License No. DPR-79 NRC Docket No. 50-328

Subject: Response To Request For Additional Information Concerning -Technical Specifications Change 09-02 – W-STAR Alternate Repair Criteria For Steam Generator Tubes Cold Leg (TAC No. ME1343)

- References: 1. Letter from TVA to NRC, "Sequoyah Nuclear Plant (SQN) Unit 2 -Technical Specifications (TS) Change 09-02 - W* Alternate Repair Criteria (ARC) For Steam Generator (SG) Tubes Cold Leg," dated May 21, 2009
 - Letter from TVA to NRC, "Response To Request For Additional Information Concerning - Technical Specifications Change 09-02 – W-STAR Alternate Repair Criteria For Steam Generator Tubes Cold Leg (TAC No. ME1343)" dated August 14, 2009

By letter dated May 21, 2009 (Ref. 1), Tennessee Valley Authority (TVA) submitted a license amendment application to NRC to revise the Sequoyah Nuclear Plant (SQN) Unit 2 technical specifications (TS) to allow the implementation of steam generator (SG) tubing alternate repair criteria for axial indications in the Westinghouse Electric Company explosive tube expansion (WEXTEX) region below the top of the tubesheet and to specify the W* distance for the SG cold legs. As discussed during a telephone conversation on September 25, 2009, between TVA and NRC, the NRC requested that additional information be submitted to support their review of the license amendment application. Enclosure 1 provides TVA's responses to the NRC requests for additional information.

TVA has determined that the additional information provided by this letter does not affect the no significant hazards considerations associated with the proposed TS changes. The proposed TS changes still qualify for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9).

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Enclosure 2 contains the revised commitments reflected in the TVA responses to the NRC requests for additional information.

If you have any questions about this change, please contact Fred Mashburn at (423) 751-8817.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the <u>29th</u> day of <u>September</u> 2009.

Respectfully,

R. M. Krićh Vice President Nuclear Licensing

Enclosures: 1. Response to NRC Request For Additional Information Concerning Technical Specifications Change 09-02 – W-Star Alternate Repair Criteria For Steam Generator Tubes Cold Leg

2. Commitments

cc (Enclosures):

NRC Regional Administrator – Region II

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NRC Senior Resident Inspector - Sequoyah Nuclear Plant

Director, Division of Radiological Health - State of Tennessee

ENCLOSURE 1

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION CONCERNING TECHNICAL SPECIFICATIONS CHANGE 09-02 – W-STAR ALTERNATE REPAIR CRITERIA FOR STEAM GENERATOR TUBES COLD LEG

NRC Question 1

Based on your responses to RAIs 4 and 5 and Commitment 2, it is not clear how you will implement the accident induced leakage methodology. For example, will the Row 1 tubes always be assumed to leak at 0.00009 gpm regardless of whether flaws are detected in the top portion of the tubesheet? When no flaws are detected in the uppermost 10.5 inches of tubing in the tubesheet, will the four assumed flaws be multiplied by 10% and then by 0.0045 gpm to arrive at the accident induced leakage for the portion of tube between 10.5 and 12 inches from the top of the tubesheet? If flaws are detected in the uppermost 10.5 inches, what assumptions will be made concerning the number of flaws in the tube-ends in the tubes other than row 1? Please clarify commitment 2 regarding your accident induced leakage methodology for when indications are, and are not, detected in the cold-leg.

TVA Response

The Row 1 inservice tubes will always be assumed to leak at 0.00009 gpm (gallon per minute) regardless of whether flaws are detected in the top portion of the tubesheet. If flaws are detected a leakage of 0.00009 gpm will be assumed for each of the inservice tubes.

If during the performance of the 20 percent sample, cold leg indications are not detected, then it is assumed that 4 indications exist in the non-examined tubes at the top-of-tubesheet region (i.e., 0.1 inch to 1 inch below WEXTEX Transition) at a calculated leakage of 0.05 gpm per tube. Also, the inservice Row 1 tubes are assumed to have a calculated leakage of 0.00009 gpm per tube. The commitment is being revised to clearly delineate the assumed leakage methodology.

NRC Question 2

In your response to RAIs 4 and 5, you describe your inspection sample expansion criteria for when flaws are detected. Given that this expansion criteria is important in projecting the amount of accident induced leakage for the portion of the tube in the tubesheet in the cold-leg, please discuss your plans to commit to this inspection sample expansion criteria (i.e., the initial 20 percent sample will be expanded to 100 percent upon finding an indication in the cold leg tubesheet region, and if an indication is found in the 100 percent expansion, 100 percent of all of the tubes in the other steam generators will be inspected).

TVA Response

TVA will inspect the +2/-10.5 inches of the cold leg tubesheets in 20 percent of the open tubes in each steam generator. If a crack-like indication is discovered in this area of a steam generator then 100 percent of that steam generator's cold leg tubesheets will be inspected. If the expanded sample identifies a crack-like indication in the +2/-10.5-inches region then 100 percent of the tubesheets in each of the steam generators will be inspected.

NRC Question 3

Please clarify Commitment 1 since it is not clear whether the 2.88 inches already includes the uncertainty associated with measuring the inspection distance from the top of the tubesheet or whether an additional adjustment will be made to the 2.88 inches to account for the uncertainty in the measurement.

In addition, Commitment 1 does not address actions to be taken if the bottom of the expansion transition on a cold leg tube is found to be greater than 2.88 inches below the top of the tubesheet. Please discuss your plans to modify Commitment 1 to indicate what will be done if the bottom of expansion transition is greater than 2.88 inches below the top of the tubesheet and to report this condition to the NRC via the Steam Generator Tube Inspection Report.

TVA Response

In TVA's response to RAI questions from the NRC dated August 14, 2009, NRC Question 8, the second paragraph of the response requires some change in wording as follows: TVA will revise the Steam Generator Program to confirm that the bottom of the cold leg expansion transition for all tubes is below the top of the tubesheet and that the bottom of the transition is no more than 2.88 inches from the top of the tubesheet. The 2.88 inches is derived from the maximum distance allowed below the top of the tubesheet being 3.00 inches less the uncertainty of 0.12 inch. If the WEXTEX expansion is greater than 2.88 inches below the top of the tubesheet, then the examination will be extended into the tubesheet to ensure at least 7.5 inches (plus measurement uncertainty) of non-flawed tube is inspected.

TVA will identify and include in our report to the NRC any tube where the bottom of the WEXTEX expansion is greater than 2.88 inches below the top of the tubesheet. These will be reported as a partial tubesheet expansion.

NRC Question 4

Please discuss your plans to report tube slippage, if it occurs. Plants implementing other alternate repair criteria, such as H*, will report slippage, if it occurs.

TVA Response

TVA will report tubes where slippage has occurred. This will be determined by reviewing the tubes that have an overexpansion greater than 0.5 inch above the top of the tubesheet. These will be reported as overexpansion (OXP). Any OXP will be reviewed to the 1992 examination data to ensure that no change in the expansion has occurred. If the expansion has changed, it will be included in the Steam Generator Tube Inspection Report and submitted to the NRC.

References

- 1. LTR-SGMP-09-35 P-Attachment, "Application of W* Alternate Repair Criteria to Sequoyah Unit 2 Cold Leg Tubes (Proprietary)," Westinghouse Electric Company LLC, dated March 25, 2009.
- 2. WCAP-14797, Revision 2, "Generic W* Tube Plugging Criteria for 51 Series Steam Generator Tubesheet Region WEXTEX Expansions," Westinghouse Electric Company, Madison, PA, March 2003 (Proprietary).

ENCLOSURE 2

COMMITMENTS

- 1. TVA will revise the Steam Generator Program to confirm that the bottom of the cold leg expansion transition for all tubes is below the top of tubesheet and that the bottom of the transition is no more than 2.88 inches from the top of tubesheet. The 2.88 inches accounts for an uncertainty of 0.12 inch. If the WEXTEX expansion is greater than 2.88 inches below the top of the tubesheet, then the examination will be extended into the tubesheet to ensure at least 7.5 inches (plus measurement uncertainty) of non-flawed tube is inspected. This commitment supersedes commitment No. 1 in Reference No. 2.
- 2. TVA will revise the Steam Generator Program to require the following assumed leakage methodology: If cold leg indications are not detected (i.e., a 20 percent sample is performed), then in the faulted SG, TVA will assume a total of four top of tubesheet indications exist in the non-examined tubes at the top-of-tubesheet region (i.e., 0.1 inch to 1 inch below WEXTEX Transition) at an assumed leakage of 0.05 gpm per tube plus the inservice Row 1 tubes that have had plugs removed will be assumed to leak at 0.00009 gallon per minute (gpm). If cold leg indications are detected, then the hot leg W* methodology will be applied to the cold leg (except 10 percent of the total cumulative quantity of indications in the cold leg region 0 to 10.5 inches below the top of tubesheet will be assumed in the cold leg region 10.5 to 12 inches and multiplied by 0.0045 gpm).
- 3. TVA will revise the Steam Generator Program to inspect the +2/-10.5 inches of the cold leg tubesheets in 20 percent of the open tubes in each steam generator. If a crack-like indication is discovered in this area of a steam generator then 100 percent of that steam generator's cold leg tubesheets will be inspected. If the expanded sample identifies a crack-like indication in the +2/-10.5-inches region then 100 percent of the tubesheets in each of the steam generators will be inspected.
- 4. The Steam Generator Tube Inspection Report will include any flaws that are identified during the inspection of the cold legs. The Steam Generator Tube Inspection Report will report tubes where slippage has occurred and will include any tube where the bottom of the WEXTEX expansion is greater than 2.88 inches below the top of the tubesheet.

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