

Tennessee Valley Authority, Post Office Box 2000, Soddy-Daisy, Tennessee 37379

June 26, 1998

TVA-SQN-TS-98-02

10 CFR 50.90

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

Gentlemen:

In the Matter of Tennessee Valley Authority Docket Nos. 50-327 50-328

SEQUOYAH NUCLEAR PLANT (SQN) - UNITS 1 AND 2 - TECHNICAL SPECIFICATION (TS) CHANGE NO. 98-02, "REDUCTION OF IODINE SPECIFIC ACTIVITY OF THE PRIMARY COOLANT"

In accordance with the provisions of 10 CFR 50.4 and 50.90, TVA is submitting a request for an amendment to SQN's licenses DPR-77 and 79 to change the TSs for Units 1 and 2. The proposed change modifies the TSs and Bases to lower the specific activity of the primary coolant from 1.0 microcurie/gram dose equivalent I-131 to 0.35 microcurie/gram dose equivalent I-131, as provided for in NRC Generic Letter (GL) 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking." This change allows a proportional increase in main steam line break induced primary-tosecondary leakage when implementing the alternate steam generator tube repair criteria, which NRC has already approved for Units 1 and 2.

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 SQN Plant Operations Review Committee and the SQN Nuclear Safety Review Board have reviewed this proposed change and determined that operation of SQN Units 1 and 2, in accordance with the proposed change, will not endanger the health and safety of

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the public. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter to the Tennessee State Department of Public Health.

Enclosure 1 to this letter provides the description and evaluation of the proposed change. This includes 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 Units 1 and 2 marked-up to show the proposed change. Enclosure 3 forwards the revised TS pages for Units 1 and 2, which incorporate the proposed change.

TVA requests that the revised TS be approved to support the Unit 1 Cycle 9 (U1C9) refueling outage scheduled to begin in early September 1998. Steam generator tube degradation at SQN is not expected to be significant. However, TVA is submitting this TS, in advance of the U1C9 refueling outage, to prevent an exigent request should a sufficiently high number of outside diameter stress corrosion cracking indications be detected where use of alternate tube repair is appropriate. We also request the TS be made effective within 45 days of NRC approval, but no sooner than the end of U1C9 operation. If you have any questions about this change, please telephone me at (423) 843-7170 or J. D. Smith at (423) 843-6672.

Sincerely,

Pedro^CSalas Licensing and Industry Affairs Manager

Subscribed and sworn to before me on this 26TH day of June

Notary Public

My Commission Expires October

Enclosures cc: See page 3 U.S. Nuclear Regulatory Commission Page 3 June 26, 1998

cc (Enclosures): Mr. R. W. Hernan, Project Manager Nuclear Regulatory Commission One White Flint, North 11555 Rockville Pike Rockville, Maryland 20852-2739

> Mr. Michael H. Mobley, Director (w/o Enclosures) Division of Radiological Health Third Floor L&C Annex 401 Church Street Nashville, Tennessee 37243-1532

NRC Resident Sequoyah Nuclear Plant 2600 Igou Ferry Road Soddy-Daisy, Tennessee 37379-3624

Regional Administrator U.S. Nuclear Regulatory Commission Region II Atlanta Federal Center 61 Fors: n St., SW, Suite 23T85 Atlanta, Georgia 30303-3415

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY SEQUOYAH NUCLEAR PLANT (SQN) UNITS 1 and 2 DOCKET NOS. 327 AND 328

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE TS 98-02 DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

I. DESCRIPTION OF THE PROPOSED CHANGE

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TVA proposes to revise the SQN Units 1 and 2 technical specifications (TSs) to lower the specific activity of the primary coolant from 1.0 microcuries/gram dose equivalent I-131 to 0.35 microcuries/gram dose equivalent I-131. This change is provided for in NRC Generic Letter (GL) 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected By Outside Diameter Stress Corrosion Cracking."

The specific changes are as follows:

- 1. Change Limiting Condition of Operation (LCO) 3.4.8.a
 from "...1.0 microcuries/gram..." to "...0.35
 microcuries/gram DOSE EQUIVALENT I-131...."
- 2. Change LCO 3.4.8 Action for Modes 1, 2, and 3* Item a from "...1.0 microcuries/gram..." to "...0.35 microcuries/gram DOSE EQUIVALENT I-131...."
- 3. Change LCO 3.4.8 Action for Modes 1, 2, 3, 4, and 5 Item a from "...1.0 microcuries/gram..." to "...0.35 microcuries/gram DOSE EQUIVALENT I-131...."
- 4. Change Table 4.4-4, "PRIMARY COOLANT SPECIFIC ACITVITY SAMPLE AND ANALYSIS PROGRAM," Item 4.a, from "...1.0 μCi /gram..." to "...0.35 μCi/gram DOSE EQUIVALENT I-131...."
- 5. Change Figure 3.4-1, the maximum allowable I-131 spiking values (i.e., region of Acceptable Operation), which may occur during power operation, proportionally lower (the lowered line is parallel to the original in accordance with GL 95-05 guidance).
- 6. Change Figure 3.4-1 title from "...>1.0 µCi/gram..." to "...>0.35 µCi/gram DOSE EQUIVALENT I-131...."

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- 7. Change Bases 3/4.4.6.2, "Operational Leakage," fifth paragraph, second and third sentences from "...3.7 gpm..." to "...8.21 gpm...." Added that the 8.21 gpm is at atmospheric conditions and 70°F. Added an additional paragraph indicating that leakage limits are more restrictive and provide additional margin.
- 8. Change Bases 3/4.4.8, "Specific Activity," second paragraph, first and second sentences from "...1.0 microcuries/gram..." to "...0.35 microcuries/gram DOSE EQUIVALENT I-131...."
- 9. Correct minor typographical errors on Unit 1 pages B3/4 4-4a and B3/4 4-5.

II. REASON FOR THE PROPOSED CHANGE

TVA is proposing to change SQN Unit 1 TSs to reduce the need for repairing or plugging steam generator (SG) tubes having outside diameter stress corrosion cracking (ODSCC) indications. TVA previously changed the SQN Units 1 and 2 TSs, via TS Change Requests 95-15 and 95-23, to add an alternate SG tube plugging criteria for tubes with ODSCC at nondented tube support plate intersections in accordance with GL 95-05. NRC approved these changes in TS Amendments 214 and 211 to Units 1 and 2, respectively. SQN did not request the decrease in the specific activity of the primary coolant when it requested alternate SG tube plugging criteria in TS Changes 95-15 and 95-23 in order to expedite the review process.

The alternate SG tube plugging criteria require each indication left in service be evaluated and assigned a leakage quantity that would be postulated to occur during a main steam line break (MSLB) accident. The summation of the leakage quantity must be less than a specified value that is limited such that the resultant offsite dose would be a fraction of the 10 CFR Part 100 offsite allowable dose limit. The offsite dose is directly dependent on the reactor coolant specific activity (i.e., dose equivalent I-131). Therefore, decreasing the maximum allowable reactor coolant specific activity will allow a larger quantity of tubes with axial ODSCC to remain in service by allowing a proportional increase leakage amount during a postulated MSLB accident.

Currently, the projected end-of-cycle MSLB leak rate from tubes left in service based on the reactor coolant specific activity limited to 1.0 microcuries/gram dose equivalent I-131, including a probability of detection adjustment and allowances for nondestructive examination (NDE) uncertainties and ODSCC growth rates, must be less than 4.0 gallons per minute (gpm) total or 3.7 gpm for the SG in the faulted loop. With a lower reactor coolant specific activity of 0.35 microcuries/gram dose equivalent I-131, the MSLB leak rate from tubes left in service would be 11.9 gpm total or 11.6 gpm for the SG in the faulted loop at operating conditions (2250 psia and 590°F). This equates to 8.51 gpm total and 8.21 gpm for the faulted loop at atmospheric conditions and 70°F.

Presently, indications less than the alternate repair limit (i.e., indications allowed to remain in service by the alternate plugging criteria) are required to be plugged or repaired in order to prevent the allowable leakage limit from being exceeded.

III. SAFETY ANALYSIS

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An evaluation has been performed to determine the maximum permissible SG primary-to-secondary leak rate during a MSLB for SQN Units 1 and 2. The evaluation considered both pre-accident and accident initiated iodine spikes as required by GL 95-05. The results of the evaluation show that the thyroid dose at the site boundary, with an accident initiated spike, yields the limiting leak rate. This case was based on a 30-rem thyroid dose at the site boundary and initial primary and secondary coolant iodine activity levels of 0.35 microcurie/gram and 0.1 microcuries/gram dose equivalent I-131, respectively. A leak rate of 11.9 gpm total or 11.6 gpm to the faulted loop at operating conditions of 2250 psia and 590°F was determined. This equates to 8.51 gpm total and 8.21 gpm for the faulted loop at atmospheric conditions and 70°F. The SG in each of the 3 intact loops was assumed to leak at a rate of 150 gallon per day (approximately 0.1 gpm). The 150 gallon per day limit is more restrictive than standard operating leakage limits and was imposed as part of TS Changes 95-15 and 95-23.

Thirty rem was selected as the thyroid dose acceptance criteria for a MSLB, with an assumed accident initiated iodine spike, based on the guidance of the Standard Review Plan (NUREG-0800) Section 15.1.5, Appendix A. Fifty percent of the 10 CFR 100 thyroid dose limit, or 150 rem, was conservatively selected as the thyroid dose acceptance criteria for the case of a pre-accident iodine spike. The evaluation included the determination of thyroid and whole body doses to both offsite and control room personnel, as well as the skin dose to control room personnel. The site boundary doses are for the initial 2-hour period following the MSLB. It is assumed the operator takes action to cooldown and depressurize the plant, and place the residual heat removal (RHR) system into service for

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further RCS heat removal within 8 hours after the accident. Once the RHR system is placed into service and the RCS has been depressurized, there are no more steam releases from the intact SGs. Thus, low population zone doses are based on activity releases for the initial 8 hours following the MSLB. The control room dose calculation is extended beyond 8 hours to 30 days because activity will continue to be in the control room atmosphere and additional time is required to either filter (via recirculation) or purge the activity from the control room atmosphere. In this case, there is no increase in the controlling thyroid dose after 24 hours. As stated previously, the site boundary thyroid dose, with an accident initiated iodine spike, is limiting with respect to the allowable primary-to-secondary leak rate following the MSLB.

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The methodology and assumptions for this evaluation are the same as the evaluation documented in Section 4.0 of WCAP-13990, "Sequoyah Units 1 and 2 Steam Generator Tube Plugging Criteria for Indications at Tube Support Plates," May 1994, with the following differences (WCAP-13990 was transmitted to NRC with SQN TS Changes 95-15 and 95-23):

- Initial primary coolant iodine activity 0.35 microcuries/gram dose equivalent I-131.
- Initial secondary coolant iodine activity 0.1 microcuries/gram dose equivalent I-131 (at NRC request during a previous submittal).
- 3. The iodine partition coefficient for the primary-tosecondary leakage in the intact SGs was assumed to be 0.01 to reflect that the leakage is below the mixture level.

GL 95-05 states that lowering the primary coolant dose equivalent iodine activity is an acceptable means for accepting higher projected primary-to-secondary SG leakage rates during a postulated MSLB accident. Therefore, based on the above stated dose values being a small fraction of 10 CFR 100 dose guideline values and consistent with NUREG-0800 acceptance criteria, this proposed change to SQN Units 1 and 2 TS is acceptable.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TVA has concluded that operation of SQN Units 1 and 2, in accordance with the proposed change to the TS [or operating license(s)], 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 TS change lowers the reactor coolant specific activity, which allows an increase in the leakage quantity that would be postulated to occur during a MSLB accident. This in turn allows a larger quantity of tubes with axial ODSCC to remain in service. The methodology for identifying and defining the ODSCC and for developing the leakage quantity remains unchanged. Therefore, the proposed change does not result in a significant increase in the probability of an accident.

An increase in the consequences of an accident would not occur because the proportional decrease in reactor coolant specific activity, while proportionally increasing the primary-to-secondary leakage during a postulated MSLB accident, has been evaluated to confirm the amount of activity released to the environment remains unchanged. The evaluation uses the same methodology used to establish the original primary-to-secondary leak limits in WCAP-13990.

The control room dose, the low population zone dose, and the dose at the exclusion area boundary remains bounded by the acceptance criteria of NUREG-0800 and continue to satisfy an appropriate fraction of the 10 CFR 100 dose limits and GDC 19. Therefore, the proposed TS change does not result in a significant increase in the consequences of an accident previously analyzed.

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

The proposed TS change does not alter the configuration of the plant. The changes do not directly affect plant operation. The change will not result in the installation of any new equipment or systems or the modification of any existing equipment or systems. No new operating procedures, conditions or modes will be created by this proposed change. SG tube structural integrity, as defined in draft Regulatory Guide 1.121, remains unchanged. Therefore the possibility of a new or different kind of accident from any accident previously evaluated is not created.

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

Lowering the reactor coolant specific activity, while allowing the proportional increase in the primary-tosecondary leakage during a postulated MSLB accident, keeps the amount of activity released to the environment unchanged. Design basis and offsite dose calculation assumptions remain satisfied. Therefore, the proposed change does not result in a significant reduction in the margin of safety.

V. ENVIRONMENTAL IMPACT CONSIDERATION

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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.