

NRR-PMDAPEm Resource

From: Dion, Jeanne
Sent: Friday, October 02, 2015 1:22 PM
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Subject: TPBAR RAIs Part 3b- ARCB
Attachments: RAI-WBN1-TPBAR RAIs_part3b -ARCB.docx

By letter dated March 31, 2015, the Tennessee Valley Authority (TVA) submitted an application for license amendment to revise the Technical Specifications to increase the maximum number of tritium producing burnable absorber rods and to delete outdated information related to the tritium production program at Watts Bar Nuclear Plant (WBN) Unit 1 (ADAMS Accession No. ML15098A446). These changes would revise TS 4.2.1, "Fuel Assemblies", TS 3.5.1 Accumulators," Surveillance Requirement (SR) 3.5.1.4, TS 3.5.4, "Refueling Water Storage Tank," and SR 3.5.4. TVA supplemented this request with letters dated in May and June 2015 (ADAMS Accession Nos. ML15147A611 and ML15167A359). In response to previous requests for information from NRC staff, TVA submitted letters dated September 14 and 25, 2015 (ADAMS Accession Nos. ML15258A204 and ML15268A568).

The staff of the Radiation Protection and Consequence Branch (ARCB) of the Office of Nuclear Reactor Regulation (NRR) has reviewed the application and supplement dated June 15, 2015 (ADAMS Accession No. ML15167A359) and has determined that additional information is required to complete the review. See the attached document which lists the new Request for Additional Information. Your response is requested before November 2, 2015.

Best Regards,

Jeanne Dion
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301-415-1349

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REQUEST FOR ADDITIONAL INFORMATION

TENNESSEE VALLEY AUTHORITY FOR

WATTS BAR NUCLEAR PLANT, UNIT 1

PROPOSED CHANGES TO INCREASE THE MAXIMUM NUMBER OF TRITIUM PRODUCING

BURNABLE ABSORBER RODS PER CYCLE

DOCKET NUMBER 50-390 (TAC NO. MF6050)

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The staff of the Radiation Protection and Consequence Branch (ARCB) of the office of Nuclear Reactor Regulation (NRR) has reviewed the application and supplement dated June 15, 2015 (ADAMS Accession No. ML15167A359) and has determined that additional information is required to complete the review.

1. Supplement dated June 2015, Enclosure 1, Page 2 of 9, indicates that the radiation protection tritium control program is based in part on Regulatory guide 8.32, "Criteria for Establishing a Tritium Bioassay Program," and DOE-HDBK-1079-94, "Primer on Tritium Safe Handling Practices."
 - a. Provide a copy of DOE-HDBK-1079-94, and describe how its guidance is incorporated into the actions outlined in the table on page 3 of 9.
 - b. Regulatory Guide 8.32 stipulates that bioassay for tritium (H-3) be provided for individuals that work around 10 kg or more of open reactor coolant with H-3 concentrations above .01 Ci/Kg. Provide a basis for why this is not an action statement in the table on page 3 of 9.
2. Supplement dated June 2015, Enclosure 2, page 33, provides estimated doses to the maximally exposed member of the public in Table 10. Verify that these doses were calculated using the methods, assumptions, and input parameters consistent with the latest version of the Watts Bar Offsite Dose Calculation Manual (ODCM). If this is not the case provide the calculations and calculational basis for these estimated doses.
3. Supplement dated June 2015, Enclosure 2, pages 9, 23 and 24, indicate that the amounts of H-3 released from Watts Bar in radwaste discharges are estimated to increase by a factor of about 14 (or up to 26,889 Ci per year). Since this license amendment request is to allow loading a maximum of 1792 TPBARs into the core, and the 26,889 Ci/yr value is based on a TPC of 2500 TPBARs, verify that these statements are incorrect and that there is no intentions of releasing 26,889 Ci/yr of H-3. Clarify and provide corrected text.

4. Supplement dated June 2015, Enclosure 2, page 23, indicates that the assumed “design basis source term” (from a TPC of 2500 TPBARs, with a H-3 permeability of 10 Ci/TPBAR/yr) and “realistic source term” (from a TPC of 1900 TPBARs, with a H-3 permeability of 5 Ci/TPBAR/yr), result in equilibrium H-3 reactor coolant concentrations of 29.8 Ci/gm and 7.0 Ci/gm respectively. Provide calculations, including all assumptions and parameters, demonstrating how these coolant concentrations were derived from their respective assumed source terms.
5. Supplement dated June 2015, Enclosure 2, page 25 implies that the radwaste mobile demineralizer is effective for processing H-3 from liquid radwaste. Provide the decontamination factor expected (and basis), or clarify this text.
6. Supplement dated June 2015, Enclosure 2, pages 24 and 25, indicate that Enclosure 2 Tables 5 through 7 demonstrate that -the Effluent Concentration Limits (ECL) in 10 CFR 20 Appendix B are met assuming a TPC of 2500 TPBARs, with a H-3 permeability of 10 Ci/TPBAR/yr (i.e., the design source term). However, the TPC H-3 concentration entries in all three of these tables is set at the “maximum allowable tritium concentration” with no explanation of how this value was derived or any nexus to the assumed source term.
 - a. Provide the basis for this maximum allowable tritium concentration, and how is derived from the design basis source term.
 - b. How does TVA propose to administer this maximum allowable tritium concentration? Will it be incorporated into the plant Technical Specifications or some other on-site document?
 - c. Demonstrate by calculation that the Watts Bar radwaste processing systems are capable of annually releasing the design basis source term, while maintaining H-3 concentrations below the maximum allowable concentration.
 - d. Tables 5 and 7 do not demonstrate that dual unit operation will result in annual liquid effluent discharges within the limits of 10 CFR 20, Appendix B. Correct the incorrect text on page 25 and provide a basis for why this is acceptable.
 - e. Provide a basis for operating at (Table 7) or near (Table 6) the maximum ECLs is ALARA or acceptable.
7. Supplement dated June 2015, Enclosure 2, page 7, indicates that the revised design basis source term no longer assumes two failed TPBARs. The source term used to design the reactor facility radwaste systems should include anticipated operational occurrence (AOOs) as well as normal operations. Provide a basis for not including this previously included AOO in the source term assumptions.
8. Supplement dated June 2015, Describe the measures (including onsite surveillance and groundwater monitoring) that TVA will employ to insure that Watts Bar operations with this increased H-3 source term will be within the requirements of NRC Bulletin No. 80-10, “CONTAMINATION OF NONRADIOACTIVE SYSTEM AND RESULTING POTENTIAL FOR UNMONITORED, UNCONTROLLED RELEASE OF RADIOACTIVITY TO ENVIRONMENT,” and 10 CFR 20.1406.