

## **NRR-PMDAPEm Resource**

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**From:** Schaaf, Robert  
**Sent:** Thursday, January 14, 2016 2:18 PM  
**To:** Schrull, Edward Dustin (edschrull@tva.gov)  
**Cc:** Szabo, Clinton William (cwszabo@tva.gov)  
**Subject:** Watts Bar Unit 1 ARCB RAI Issues for Discussion in Jan 19 Public Meeting.pdf  
**Attachments:** Watts Bar Unit 1 ARCB RAI Issues for 160119 public meeting.pdf

Ed,

See the attached file for the issues to be discussed at Tuesday's public meeting. The agenda is set up for Roger to take 10-15 minutes to expand on the attached and then to have an open dialog among Roger, DORL and technical division management, and TVA attendees regarding these issues to reach common understanding of path to resolve.

Regards,  
Bob

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**Hearing Identifier:** NRR\_PMDA  
**Email Number:** 2667

**Mail Envelope Properties** (6672685481004b7983a0b0ffa24ac21d)

**Subject:** Watts Bar Unit 1 ARCB RAI Issues for Discussion in Jan 19 Public Meeting.pdf  
**Sent Date:** 1/14/2016 2:17:38 PM  
**Received Date:** 1/14/2016 2:17:00 PM  
**From:** Schaaf, Robert

**Created By:** Robert.Schaaf@nrc.gov

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Tracking Status: None

**Post Office:** HQPWMSMRS07.nrc.gov

| <b>Files</b>   | <b>Size</b> | <b>Date &amp; Time</b> |        |
|--|-------------|------------------------|--------|
| MESSAGE  | 665         | 1/14/2016 2:17:00 PM   |        |
| Watts Bar Unit 1 ARCB RAI Issues for 160119 public meeting.pdf |             |                        | 102095 |

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**Priority:** Standard  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**  
**Recipients Received:**

**TENNESSEE VALLEY AUTHORITY**  
**WATTS BAR NUCLEAR PLANT, UNIT 1**  
**SUMMARY OF UNRESOLVED RAI QUESTIONS REGARDING**  
**PROPOSED CHANGES TO INCREASE THE MAXIMUM NUMBER OF**  
**TRITIUM PRODUCING BURNABLE ABSORBER RODS PER CYCLE**  
**DOCKET NUMBER 50-390 (TAC NO. MF6050)**

1. ARCB Request for Additional Information (RAI) 1b Issue: The proposed amendment revises the previous commitment in Watts Bar Unit 1 Amendment 40 to control the concentration of tritium in the reactor coolant to 9.0  $\mu\text{Ci/g}$ . The original Tritium Production Topical Report was based on a 3.5  $\mu\text{Ci/g}$  reactor coolant control level so that no “undesirable radiological conditions” result from the tritium buildup in plant liquid systems. In the proposed amendment, TVA estimates that the Design Basis equilibrium tritium concentration in the reactor coolant could be as high as 29.8  $\mu\text{Ci/g}$ , with a “realistic” estimate of 12  $\mu\text{Ci/g}$ . Therefore, TVA needs to demonstrate that its tritium control and monitoring are adequate to ensure onsite exposures will not result in occupational doses above 10 CFR Part 20 limits.
  - a. There appears to be a typo in the response. The second sentence refers to “0.01  $\mu\text{Ci/ml}$  (i.e., 10  $\mu\text{Ci/g}$ ) action level” in Table 3.1, “Tritium Action Levels.” However, 0.01  $\mu\text{Ci/ml}$  does not equal 10  $\mu\text{Ci/g}$  of water. Since both values are in the table, it is unclear which reference is correct.
  - b. The last two rows in the 5<sup>th</sup> column, “Recommended Action,” of Table 3.1 list urinalysis as “recommended” and “requested,” respectively. This wording implies that these actions are optional, which is somewhat contradicted by Note 2 to the table and the text in the paragraph following the table. This response needs clarification. The licensee’s expectations should clearly be reflected in the program Action Statements.
  
2. ARCB RAI 6b Issue: TVA demonstrates that the effluent releases under design basis assumptions will not exceed the dose limit to a member of the public by demonstrating that the sum of the fractional effluent concentration limits (ECLs) from 10 CFR Part 20, Appendix B, are  $\leq 1.0$ , as allowed by 10 CFR Part 20. However, the tables provided only demonstrate this if the tritium releases from TPBAR operations are less than a “maximum allowable effluent concentration.” This maximum value in the tables was back calculated from the assumption that aggregate concentration(C)/ECLs = 1.0, but the amount of tritium this represents is only about half of the tritium that would be released from the TPBARS annually under the design basis assumptions. The response to the RAI on how TVA will insure effluent concentrations do not exceed the maximum allowable demonstrates some confusion about the ECL criteria in the Watts Bar ODCM. Basically, TVA’s answer to the question of how it will ensure that the annual effluent releases will not exceed  $C/ECL = 1.0$  is that they will control effluent concentrations within the  $C/ECL \leq 10.0$  (i.e., the instantaneous release criteria in the WBN ODCM). This answer appears to misapply the instantaneous release criteria in the ODCM, which

permit *instantaneous* releases of 10 times the effluent concentration limits of Appendix B, to demonstrate that effluent releases will not exceed the design criteria in 10 CFR Part 50, Appendix I, per 10 CFR 50.36a.

3. ARCB RAI 6c Issue: The response appears to accept that TVA will not be able to meet the ECL limit by releasing the full design basis source term annual TPBAR release. It states that 45% of the annual TPBAR source term (equivalent to 413,000 gal. of effluent) will have to be held onsite. Since this is on an annual basis, there would appear to be no opportunity for future release if the plant is operated at the design basis assumptions. The response to this RAI does not seem technically feasible unless the licensee intends to build additional onsite storage tanks to support continued operation at the design basis tritium release rate.