NRR-PMDAPEm Resource

From: Dion, Jeanne
Sent: Friday, August 14, 2015 12:19 PM
To: Szabo, Clinton William; Arent, Gordon <garent@tva.gov> (garent@tva.gov); rhbryan@tva.gov
Cc: Krepel, Scott; Jackson, Christopher; Quichocho, Jessie
Subject: Request for Additional Information Regarding Tritium production License Amendment (TAC No. MF6050)
Attachments: FINAL WBN tritium LAR SRXB RAIs.docx

Gentlemen,

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the Technical Specifications to increase the maximum number of tritium producing burnable absorber rods and to delete outdated information related to the tritium production program at Watts Bar Nuclear Plant (WBN) Unit 1 (ADAMS Accession No. ML15098A446).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 ML15169B117).

The U.S. Nuclear Regulatory Commission (NRC) staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is attached to this e-mail. The proposed questions were provided to your staff on August 5, 2015, and TVA has agreed to provide a response to this information before September 14, 2015.

Please contact me if you have any concerns with this request.

Jeanne Dion
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Watts Bar Special Projects Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
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)

1. As part of the review of the license amendment approved for loading of 2,304 tritium producing burnable absorber rods (TPBARs) in 2002, TVA indicated that they planned to use TPBARs in key peripheral locations to suppress power. The intent of doing so was to ensure that the vessel fluence remains bounded by the projected value used in the design basis evaluation for 10 CFR 50.61 compliance. Please confirm that the expected vessel fluence for cores with 1,792 TPBARs will continue to be less than the value assumed in the design basis pressurized thermal shock evaluation for Watts Bar Unit 1.

2. The post-Loss of Coolant Accident (LOCA) subcriticality assessment was performed using revised assumptions for leaching of lithium from the core due to TPBAR failures. A series of Pacific Northwest National Laboratory (PNNL) tests are used as justification for the new assumptions. However, little information is provided about the PNNL tests other than the experiment durations and the temperature at which the tests were conducted. Provide the following information:

    a. A description of the test conditions, including ambient fluid conditions, fluid flow, installation configuration for the TPBAR, and mechanical loads.
    b. The pellet leach rates observed during the tests.
    c. The projected maximum temperature for the TPBARs during post-LOCA conditions.
    d. Technical justification for the applicability of the test results to the post-LOCA environment that would be experienced by the TPBARs, including fluid flow/turbulence, mechanical vibrations, thermal contraction/expansion, and coolant chemistry.

3. In order to eliminate all unborated dilution sources, TVA has committed to replacing check valves on the lower compartment supply lines for the Component Cooling Water (CCW) System and Essential Raw Cooling Water (ERCW) System, as well as replacing the upper compartment cooler cooling coils. Chapter 9 of the UFSAR indicates that one of the CCW return lines has the same vulnerability; that is, the potential exists for backflow into the containment via check valve 1-CKV-70-698. Explain how backflow is

precluded from occurring through this flow path, or incorporate this potential dilution source in the post-LOCA subcriticality assessment.

4. The LAR states that the RWST, ice mass, and accumulator fluid masses are assumed to be at a minimum value, while the Reactor Coolant System (RCS) fluid mass is assumed to be at a maximum. The intent is to conservatively select the fluid masses that will result in minimizing the boron concentration of the resulting mixture. For the hot leg switchover (HLSO) assessment, the sump boron concentration for all cases is lower than the minimum boron concentration for the ice mass (1,800 ppm). Therefore, assuming the minimum ice mass fluid mass is appropriate. However, for the long term assessments, this is not true. As a result, the ice mass would represent a boron dilution source and the maximum available fluid mass should be assumed. Provide an updated long term assessment that utilizes an appropriately conservative ice fluid mass.