

NRR-PMDAPEm Resource

From: Dion, Jeanne
Sent: Tuesday, August 25, 2015 3:15 PM
To: Szabo, Clinton William; Arent, Gordon <garent@tva.gov> (garent@tva.gov); Schroll, Edward
Dustin
Cc: Hess, Thomas A
Subject: Watts Bar 1- FINAL Rad protection RAIs for MF6050
Attachments: FinalRAIs_ARCB.docx

Gentlemen,

By letter dated March 31, 2015 as supplemented by letters dated May 27 and June 15, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML15098A446, ML15147A611 and ML15167A359), Tennessee Valley Authority, (TVA, the licensee), submitted a License Amendment Request (LAR) to revise Watts Bar Nuclear Plant, Unit 1 (WBN) Technical Specifications (TSs). The proposed change would revise WBN TS to increase the maximum number of Tritium Producing Burnable Absorber Rods (TPBARs) that can be irradiated per cycle from 704 to 1,792.

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. This request was discussed with Clinton Szabo and a response from TVA is expected to be submitted on the docket no later than September 25, 2015.

Please let me know if you have any questions.

Thanks,

Jeanne Dion
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Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation
301-415-1349

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OFFICE OF NUCLEAR REACTOR REGULATION
REQUEST FOR ADDITIONAL INFORMATION
FOR A LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL
SPECIFICATIONS TO INCREASE THE MAXIMUM NUMBER OF TRITIUM
PRODUCING BURNABLE ABSORBER RODS THAT CAN BE IRRADIATED PER
CYCLE FROM 704 TO 1,792
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT UNIT 1
DOCKET NUMBER 50-390
TAC No. MF6050

By letter dated March 31, 2015 as supplemented by letters dated May 27 and June 15, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML15098A446, ML15147A611 and ML15167A359), Tennessee Valley Authority, (TVA, the licensee), submitted a License Amendment Request (LAR) to revise Watts Bar Nuclear Plant, Unit 1 (WBN) Technical Specifications (TS). The proposed change would revise WBN TS 4.2.1, "Fuel Assemblies," to increase the maximum number of Tritium Producing Burnable Absorber Rods (TPBAR) that can be irradiated per cycle from 704 to 1,792.

During the Nuclear Regulatory Commission (NRC) staff's review of the impact of increasing the maximum number of TPBARs that can be irradiated per cycle, on all DBAs currently analyzed in the WBN updated final safety analysis report (UFSAR) that could have the potential for significant dose consequences per Regulatory Guide (RG) 1.183 and 1.195 the NRC staff determined that more information was needed to complete the review.

ARCB-RAI-1

In the application supplement dated June 15, 2015 it states:

LAR Enclosure 2, Section, "Radiological Consequences of Accidents," was revised to include the inputs and assumptions utilized for each design basis accident (DBA) related to the tritium source term for the current licensing basis and the new licensing basis, if changed....In addition, with one exception, the Main Steam Line Break and Steam Generator Tube Rupture inputs and assumptions are the same as those used to support License Amendment 91 regarding the change to the Dose Equivalent I-131 spike limit, which was approved in the NRC Safety Evaluation dated December 5, 2012 (ADAMS Accession No. ML12279A115). The only exception is the control room isolation delay time, which was increased from 40 seconds to 74 seconds to correct an error in how the delay time was determined.

The main steam line break and steam generator tube rupture accidents are being updated with a new tritium concentration and a new control room isolation delay time, therefore provide the dose analysis calculation for both of these accidents, and if not in the calculation provide a tabulation of all analysis inputs and assumptions used in offsite

ENCLOSURE

and control room habitability analyses in sufficient detail to enable the staff to evaluate the appropriateness of this data and, if deemed necessary, to perform confirmatory calculations.

ARCB-RAI-2

In TVA's letter dated May 21, 2002, "Watts Bar Nuclear Plant – Request for Additional Information (RAI) Regarding Tritium Production – Interface Issue Number 5 – Control Room Habitability Systems (TAC No. MB1884)," (ADAMS accession number ML021440139) TVA stated:

The [total effective dose equivalent] TEDE values were calculated for informational purposes only and do not replace the whole body and thyroid dose guidelines currently in the WBN licensing basis. Future design basis accident radiological analyses, which are intended to demonstrate compliance with regulatory criteria, will continue to assess whole body and thyroid doses and will contain informational data regarding TEDE.

The Radiological Consequences of Accidents section in Enclosure 2, Revision 1 submitted for NRC review on June 15, 2015 contains TEDE and beta doses and does not provide whole body and thyroid doses. Provide the current licensing basis and new proposed whole body and thyroid doses for each accident analyzed.

ARCB-RAI-3

Amendment number 40 (ADAMS Accession Number ML022540925) to the WBN Unit 1 Operating License was issued September 23, 2002, and authorized the insertion of up to 2304 TPBARs in the WBN Unit 1 core. In amendment number 40 TVA assessed the following design basis accident analyses affected by the production of 2,304 TPBARs:

- Loss of offsite power (LOOP)
- Waste gas decay tank (WGDT) failure
- Loss of coolant accident (LOCA)
- Main steam line break (MSLB)
- Steam generator tube rupture (SGTR)
- Fuel handling accident (FHA)
- Failure of small lines carrying primary coolant outside containment
- Rod ejection accident

The LAR dated March 31, 2015 as supplemented by letters dated May 27 and June 15, 2015, TVA provided an analysis of the radiological consequences for the LOCA, FHA, MSLB, and SGTR. However, there is no analysis that provides the impact of increasing the maximum number of TPBARs that can be irradiated per cycle from 704 to 1,792 on the radiological consequences for the LOOP, WGDT failure, failure of small lines carrying primary coolant outside containment, and rod ejection accident.

Provide the technical analysis performed to determine that the current licensing basis

radiological consequences for the LOOP, WGDT failure, failure of small lines carrying primary coolant outside containment, and rod ejection accident bounds the new radiological consequences for the requested increase to 1,792 TPBARs per cycle. This technical analysis should provide the following:

- A tabulation of all analysis inputs and assumptions used in offsite and control room habitability analyses in sufficient detail to enable the staff to evaluate the appropriateness of these data and, if deemed necessary, to perform confirmatory calculations as compared to the new inputs and assumptions that reflect the insights gained from Cycles 6 through 12.
- Explain any differences, or if there are no differences, then it should explain why it is acceptable to remain the same considering the insights gained from Cycles 6 through 12.
- Provide the current licensing basis and new proposed whole body and thyroid doses for each accident analyzed.

ARCB-RAI-4

Provide additional detail on the error in control room delay time determination, and explain why the increase in control room isolation delay time is not applicable to the other design basis accidents (DBAs) referenced in question 3 above.

If the increase in control room isolation delay time is applicable to the other DBAs then provide the dose analysis calculation for these accidents, and if not in the calculation provide a tabulation of all analysis inputs and assumptions used in offsite and control room habitability analyses in sufficient detail to enable the staff to evaluate the appropriateness of this data.