

**From:** Kimberly Green  
**Sent:** Thursday, May 25, 2023 9:52 AM  
**To:** Wells, Russell Douglas  
**Subject:** Audit Plan Related to Review of the Watts Bar Nuclear Plant, Units 1 and 2, License Amendment Request to Increase the Number of Tritium Producing Burnable Absorber Rods (EPID L-2023-LLA-0039)  
**Attachments:** Audit Plan.docx

Dear Mr. Wells,

By application dated March 20, 2023 (Agencywide Documents Access and Management System Accession No. ML23079A270), pursuant to Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), the Tennessee Valley Authority (TVA) submitted a license amendment request for the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. The proposed changes would: revise Watts Bar, Units 1 and 2, Technical Specification (TS) 4.2.1, "Fuel Assemblies," to increase the number of tritium producing burnable absorber rods that can be irradiated in the core to 2,496; revise Watts Bar, Unit 1, TS 5.9.6, "Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)," to be consistent with Watts Bar, Unit 2, TS 5.9.6; revise both units' TS 5.9.6.b to add WCAP-18124-NP-A Rev. 0 Supplement 1-NP-A, Rev. 0, "Fluence Determination with RAPTOR-M3G and FERRET—Supplement for Extended Beltline Materials"; and revise the Watts Bar Dual-Unit Update Final Safety Analysis Report to modify the source term for the design basis accident analyses to allow the core fission product inventory to be calculated using an updated version of the ORIGEN code.

The U.S. Nuclear Regulatory Commission staff is reviewing the proposed changes and has determined that a regulatory audit is necessary to aid its review.

Attached, please find an audit plan containing the basis, scope, information needs, audit team, logistics, and deliverable for this audit.

If you have any questions, please let me know.

Regards,  
Kim Green

**Hearing Identifier:** NRR\_DRMA  
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**From:** Kimberly Green

**Created By:** Kimberly.Green@nrc.gov

**Recipients:**

"Wells, Russell Douglas" <rdwells0@tva.gov>

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REGULATORY AUDIT PLAN  
BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
TO SUPPORT THE REVIEW OF LICENSE AMENDMENT REQUEST  
TO INCREASE ALLOWABLE NUMBER OF  
TRITIUM PRODUCING BURNABLE ABSORBER RODS  
TENNESSEE VALLEY AUTHORITY  
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
DOCKET NOS. 50-390 AND 50-391

1.0 BACKGROUND

By application dated March 20, 2023 (Agencywide Documents Access and Management System Accession No. ML23079A270), pursuant to Section 50.90 of Title 10 of the *Code of Federal Regulations* (10 CFR), the Tennessee Valley Authority (TVA) submitted a license amendment request (LAR) to amend Facility Operating License Nos. NPF-90 and NPF-96 for Watts Nuclear Plant (Watts Bar), Units 1 and 2, respectively. The proposed amendments would revise Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2, Technical Specification (TS) 4.2.1, "Fuel Assemblies," to increase the number of tritium producing burnable absorber rods that can be irradiated in the core from 1,792 to 2,496. The proposed amendments would revise Watts Bar, Unit 1, TS 5.9.6, "Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)," to be consistent with Watts Bar, Unit 2, TS 5.9.6. The proposed amendments also would revise both units' TS 5.9.6.b to add WCAP-18124-NP-A Rev. 0 Supplement 1-NP-A, Rev. 0, "Fluence Determination with RAPTOR-M3G and FERRET—Supplement for Extended Beltline Materials." Lastly, the proposed amendments would revise the Watts Bar Dual-Unit Update Final Safety Analysis Report to modify the source term for the design basis accident analyses to allow the core fission product inventory to be calculated using an updated version of the ORIGEN code.

The Nuclear Regulatory Commission (NRC) staff has determined that a regulatory audit of the supporting information for the LAR should be conducted in accordance with Office of Nuclear Reactor Regulation Office Instruction LIC-111, "Regulatory Audits" (ML19226A274).

2.0 REGULATORY AUDIT BASIS

A regulatory audit is a planned license- or regulation-related activity that includes the examination and evaluation of primarily non-docketed information associated with the LAR. An audit is conducted to gain understanding, to verify information, and to identify information that will require docketing to support the basis of a licensing or regulatory decision. An audit will assist the NRC staff in efficiently conducting its review and gaining insights to TVA's processes and procedures. Information identified during the audit that the NRC staff relies upon to make the safety determination must be submitted on the docket.

### 3.0 REGULATORY AUDIT SCOPE AND METHODOLOGY

NRC staff's objectives of the audit are the following:

- Gain a better understanding of the calculations, analyses, and bases underlying the LAR and confirm the NRC staff's understanding of the LAR.
- Gain a better understanding of the plant's design features and its implications for the LAR.
- Identify questions and requests that may become formal requests for additional information (RAIs) per NRR Office Instruction LIC-115, "Processing Requests for Additional Information" (ML21141A238).

### 4.0 INFORMATION AND OTHER MATERIAL NECESSARY FOR THE AUDIT

The NRC staff requests access to the following documents:

Item #	Audit Item
1	Calculation(s) related to compliance with DNB Criterion
2	Document(s)/calculation(s) related to the neutron fluence determination
3	Document(s) that describes impact on Watts BAR Units 1 and 2 core Neutronic design due to increasing the TPBAR to 2496
4	Document(s) that describes the impact on poison (absorber other than TPBARs) of increasing the number of TPBARs to 2496
5	Calculation(s)/document(s) related to the control rod drop accident analysis
6	Calculation(s)/document(s) related to the ATWS analysis
7	Document(s) related to post-LOCA sub-criticality verification
8	Procedures/documents related to the Watts Bar Tritium Bioassay Program: <ul style="list-style-type: none"> <li>a. RCI-137, "Radiation Protection Tritium Control Program"</li> <li>b. NPG-SPP-05.1, "Radiological Controls"</li> <li>c. RCDP-7, "Bioassay and Internal Dose Program"</li> </ul>
9	Methodology, including parameters, calculations, and assumptions (that relate to transport, reduction, and release of radioactive material to the environment, as applicable) that demonstrate how the values in the following tables were determined: <ul style="list-style-type: none"> <li>• Table 4.4-5</li> <li>• Table 4.4-6</li> <li>• Table 4.4-7</li> <li>• Table 4.4-9</li> <li>• Table 4.4-11</li> <li>• Table 4.11-10</li> <li>• Table 4.11-11</li> </ul>
10	Information supporting the change in the gap activity reference from RG 1.25 to RG 1.183 (refer to Enclosure 1, Attachment 6, FSAR page 15.1-9 markup)

Item #	Audit Item
11	List of changes made/document(s) revised for Interface Issue 2, "Procurement and Fabrication Issues"
12	List of approved suppliers of TPBARs
13	Purchase orders associated with TPBARs
14	Program reviews, source surveillances, and audit reports, as applicable, of the material, service, and subcomponent suppliers of the TPBARs

Additional information needs identified during the audit will be communicated to the designated point of contact.

The NRC will document the final audit items list as an enclosure to the audit report, which will be publicly available.

## 5.0 TEAM ASSIGNMENTS

The audit team will consist of the following NRC staff:

Team Member	Division	Area of Responsibility
Kimberly Green Kimberly.Green@nrc.gov	NRR/DORL/LPLII-2	Project Manager
Mathew Panicker Mathew.Panicker@nrc.gov	NRR/DSS/SFNB	Technical Review Core neutronics, accident analysis
Bill Rautzen William.Rautzen@nrc.gov	NRR/DRA/ARCB	Technical Review Dose Assessment
David Garmon David.Garmon@nrc.gov	NRR/DRA/ARCB	Technical Review Dose Assessment
Yamir Diaz-Castillo Yamir.Diaz-Castillo@nrc.gov	NRR/DRO/IQVB	Technical Review Quality Assurance

Key TVA personnel knowledgeable in the areas of interest should be made available for interactions, on a mutually agreeable schedule, to respond to any questions from the NRC staff.

## 6.0 LOGISTICS

To support the review schedule communicated to TVA when the NRC staff accepted the LAR for technical review, audit activities will be performed remotely and virtually using Microsoft Teams and an internet-based portal made available by TVA.

The internet-based portal should be populated with the documents requested in Section 4.0 of this audit plan. The following conditions associated with the portal must be maintained while the NRC staff have access to the portal:

- The portal will be password-protected. A separate password will be assigned to each member of the NRC staff participating in the audit.
- The portal should prevent the NRC staff from printing, saving, downloading, or collecting any information directly from the online portal.

- Conditions of use of the portal will be displayed on the login screen and will require acknowledgment by each user.

Username, password, and other portal access information should be provided directly to members of the NRC audit team. The NRC licensing project manager will provide TVA with names and contact information of the NRC staff participating in the audit. All other communications should be coordinated through the NRC project manager.

NRC information requests and communications with TVA staff will be coordinated through the NRC's licensing project manager.

The virtual audit will commence after the internet-based portal is set up and the documentation addressing the items in section 4.0 of this audit plan is made available to the NRC staff. The audit will be conducted from June 12 through June 30, 2023. The NRC project manager will coordinate with the NRC staff and TVA for any teleconferences needed after the NRC staff has reviewed the documentation. The NRC's licensing project manager will inform TVA of the entrance and exit call dates when they are established. The NRC's licensing project manager will inform TVA via routine communications when the NRC staff no longer needs access to the portal.

#### 7.0 DELIVERABLES

The NRC staff will issue an audit summary report within 90 days of the audit exit call. The staff may request additional information needed to complete the review of the LAR but will issue any such RAIs separately from audit-related correspondence in accordance with NRR Office Instruction LIC-115, "Processing Requests for Additional Information" (ML21141A238).