



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

February 16, 2024

Mr. James Barstow  
Vice President, Nuclear Regulatory  
Affairs and Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 4A-C  
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ENVIRONMENTAL  
ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO AN  
INCREASE IN THE MAXIMUM NUMBER OF TRITIUM PRODUCING  
BURNABLE ABSORBER RODS (EPID L-2023-LLA-0039)

Dear Mr. Barstow:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for amendments dated March 20, 2023. The proposed amendments would revise the Watts Bar Nuclear Plant, Units 1 and 2, Technical Specification (TS) 4.2.1, "Fuel Assemblies," to increase the maximum number of tritium producing burnable absorber rods (TPBARs) from 1,792 to 2,496, and TS 5.9.6, "Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR)," to add supporting methodologies. The proposed amendments would also revise the Watts Bar Dual-Unit Updated Final Safety Analysis Report to modify the source term for design basis accident analyses.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

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Kimberly J. Green, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-390 and 50-391

Enclosure:  
Environmental Assessment and Finding  
of No Significant Impact

cc: Listserv

**ENCLOSURE**

**FEDERAL REGISTER NOTICE**

**NUCLEAR REGULATORY COMMISSION**

**[Docket Nos. 50-390 and 50-391; NRC-2024-0035]**

**Tennessee Valley Authority;**

**Watts Bar Nuclear Plant, Units 1 and 2;**

**Environmental Assessment and Finding of No Significant Impact**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Notice; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is considering issuance of amendments to Facility Operating License Nos. NPF-90 and NPF-96, issued on February 7, 1996, and October 22, 2015, respectively, and held by Tennessee Valley Authority (TVA, the licensee) for the operation of Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. The proposed amendments would revise the Watts Bar, Units 1 and 2, Technical Specification (TS) 4.2.1, "Fuel Assemblies," and TS 5.9.6, "Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)," to increase the maximum number of tritium producing burnable absorber rods (TPBARs) and to add supporting methodologies. The proposed amendments would also revise the Watts Bar Dual-Unit Updated Final Safety Analysis Report to modify the source term for design basis accident analyses. The NRC is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the proposed amendments.

**DATES:** The EA and FONSI referenced in this document are available on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**.

**ADDRESSES:** Please refer to Docket ID **NRC-2024-0035** when contacting the NRC about the availability of information regarding this document. You may obtain publicly available information related to this document using any of the following methods:

- **Federal Rulemaking Website:** Go to <https://www.regulations.gov> and search for Docket ID **NRC-2024-0035**. Address questions about Docket IDs in Regulations.gov to Stacy Schumann; telephone: 301-415-0624; email: Stacy.Schumann@nrc.gov. For technical questions, contact the individual listed in the “For Further Information Contact” section of this document.

- **NRC’s Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select “Begin Web-based ADAMS Search.” For problems with ADAMS, please contact the NRC’s Public Document Room (PDR) reference staff at 1-800-397-4209, at 301-415-4737, or by email to PDR.Resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document. In addition, for the convenience of the reader, the ADAMS accession numbers are provided in a table in the “Availability of Documents” section of this document.

- **NRC’s PDR:** The PDR, where you may examine and order copies of publicly available documents, is open by appointment. To make an appointment to visit the PDR, please send an email to PDR.Resource@nrc.gov or call 1-800-397-4209 or 301-415-4737, between 8 a.m. and 4 p.m. eastern time (ET), Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Kimberly Green, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, telephone: 301-415-1627; email: Kimberly.Green@nrc.gov.

## **SUPPLEMENTARY INFORMATION:**

### **I. Introduction**

The NRC is considering issuance of amendments to Facility Operating License Nos. NPF-90 and NPF-96, issued to TVA, for the operation of Watts Bar, Units 1 and 2, located in Rhea County, Tennessee. Therefore, as required by section 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments," of title 10 of the *Code of Federal Regulations* (10 CFR), the NRC performed an EA that analyzes the environmental impacts of the proposed licensing action and alternatives as appropriate. Based on the results of the EA that follows, and in accordance with 10 CFR 51.31(a), the NRC has determined not to prepare an environmental impact statement for the proposed licensing action and is issuing a FONSI.

### **II. Environmental Assessment**

#### *Description of the Proposed Action*

The proposed action would revise Watts Bar, Units 1 and 2, TS 4.2.1 to increase the limit on the maximum number of TPBARs that can be irradiated in the reactor core in an operating cycle from 1,792 to 2,496. The proposed action would also revise Watts Bar, Units 1 and 2, TS 5.9.6 to add supporting methodologies. Additionally, the proposed action would revise the Watts Bar Dual-Unit Updated Final Safety Analysis Report to modify the source term for design basis accident analyses to allow the core fission product inventory to be calculated using an updated version of the ORIGEN computer code.

The proposed action is in accordance with the licensee's application dated March 20, 2023 (ADAMS Accession No. ML23079A270).

### *Need for the Proposed Action*

The U.S. Department of Energy (DOE) and TVA are cooperating in a program to produce tritium for the National Security Stockpile by irradiating TPBARs in the Watts Bar, Units 1 and 2, reactor cores. Tritium is produced when the neutrons produced by nuclear fission in the core are absorbed by the lithium target material of the TPBARs. A solid zirconium metal cladding covering the TPBARs (called a “getter”) captures the tritium produced.

This proposed action is needed to support the DOE, National Nuclear Security Administration, National Security Stockpile, in accordance with Public Law (PL) 106-65. Section 3134 of PL 106-65 directs the Secretary of Energy to produce new tritium at Watts Bar. By letters dated July 29, 2016 (ADAMS Accession No. ML16159A057), and May 22, 2019 (ADAMS Accession No. ML18347B330), the NRC approved similar amendments to irradiate up to 1,792 TPBARs in the Watts Bar reactor cores. The EA and FONSI for those licensing actions, completed on June 23, 2016, and February 6, 2019, can be found in ADAMS under Accession Nos. ML16138A045 and ML18332A013, respectively.

### *Environmental Impacts of the Proposed Action*

The NRC staff has assessed the potential environmental impacts from the proposed increase in the maximum number of TPBARs that can be irradiated in the Watts Bar reactor cores.

The non-radiological and radiological impacts on the environment that may result from the proposed action are summarized as follows.

#### **Non-Radiological Impacts**

The proposed action involves no new construction or modification of Watts Bar, Units 1 and 2, operational systems and would have no direct impact on land and water

use or water quality, including terrestrial and aquatic biota. There would also be no change in the quality or quantity of non-radiological effluents and no need to modify the nuclear plant's National Pollutant Discharge Elimination System permit. The proposed action would have no effect on air pollutant emissions or ambient air quality. In addition, the proposed action would have no noticeable effect on socioeconomic and environmental justice conditions in the region, and no adverse effect on historic and cultural resources. Therefore, the proposed action would have no significant non-radiological effect on the quality of the human environment.

### **Radiological Impacts**

All nuclear power plants, including Watts Bar, Units 1 and 2, release small amounts of radioactive material to the environment as liquid or gaseous effluents as part of normal operations. The NRC summarizes U.S. nuclear power plant effluent data on its public website [<https://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr2907/index.html>]. These effluents are controlled, monitored, and reported per NRC requirements to ensure that doses to the public are known and within acceptable guidelines that are as low as is reasonably achievable (ALARA). The Watts Bar Offsite Dose Calculation Manual (ODCM), documented in the Watts Bar Nuclear Power Plant 2022, Annual Radioactive Effluent Release Report (ADAMS Accession No. ML23117A100), provides the limits and methods used by TVA to ensure compliance with requirements that apply to radioactive effluents. Watts Bar, Units 1 and 2, use waste treatment systems to collect, process, and recycle plant fluids that contain radioactive material and to dispose of gaseous and liquid effluents and solid wastes in a safe and controlled manner within NRC and U.S. Environmental Protection Agency radiation safety standards. Implementation of the proposed action would allow up to 2,496 TPBARs per cycle to be irradiated in the Watts Bar, Units 1 and 2, reactor

cores. Increasing the number of TPBARs irradiated from 1,792 to 2,496 per reactor core could increase the quantities of radioactive material released from Watts Bar to the environment because some of the tritium that is produced permeates through the TPBAR cladding and is released into the reactor coolant system (RCS) fluid. Radioactive material in RCS fluid can be released as gaseous or liquid effluent. For the purposes of assessing the environmental impacts and the regulatory compliance of this proposed action for tritium production, TVA assumed a core load of 2,496 TPBARs with a permeation rate of 5.0 curies per TPBAR per year (Ci/TPBAR/year) of tritium and was able to demonstrate that liquid and gaseous effluents would be within applicable limits. The assumed permeation rate is conservative in that it bounds the observed and maximum TPBAR tritium permeation rates at Watts Bar, Units 1 and 2. Specifically, based on the licensee's experience with TPBARs dating back to 2004, the licensee has observed a permeation rate for tritium production of less than 3.5 Ci/TPBAR/year. Additionally, as provided in this document, the licensee demonstrated that other changes to the radioisotope inventory that can impact effluent levels would be minor and would not impact the licensee's ability to meet applicable limits. Therefore, while the quantity of tritium generated during plant operations would increase under the proposed action, radioactive effluents from Watts Bar would remain within applicable limits.

#### Radioactive Gaseous Effluents

The Watts Bar units maintain a gaseous waste management system (GWMS) that is designed to process and control the release of radioactive gaseous effluents into the environment in accordance with the requirements of 10 CFR 20.1301, "Dose limits for individual members of the public," and to ensure consistency with the ALARA dose objectives set forth in appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for



Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents,” to 10 CFR part 50, “Domestic Licensing of Production and Utilization Facilities.”

As stated in the license amendment request, TVA assumed a core load of 2,496 TPBARs with a permeation rate of 5.0 Ci/TPBAR/year of tritium, which is a conservative source term that bounds the observed and maximum TPBAR tritium permeation rate as seen from historic Watts Bar, Units 1 and 2, tritium production.

To determine whether the resultant gaseous effluents would fall within the requirements of 10 CFR 20.1301, TVA calculated the sum of the ratios of each isotope concentration (C) to its corresponding gaseous Effluent Concentration Limit (ECL, as listed in 10 CFR part 20, “Standards for Protection against Radiation,” appendix B, “Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage,” table 2, “Effluent Concentration,” column 1). Consistent with the requirements of 10 CFR 20.1302(b)(2)(i), a C/ECL sum of less than 1.0 indicates that the annual average effluent release is within the limits of 10 CFR 20.1301. Tables 4.11-6 and 4.11-7 of the license amendment request demonstrate that TVA’s calculated C/ECL sums for gaseous effluent releases at the Watts Bar units from an assumed core load of 2,496 TPBARs for containment purge without filtration would be 0.458 (single unit) and with continuous filtration would be 0.402 (single unit). TVA’s calculated C/ECL sums for gaseous effluent releases for both Watts Bar, Units 1 and 2 (dual-unit operation) for containment purge without filtration would be 0.915 and with continuous filtration would be 0.805. Therefore, the licensee demonstrated that the C/ECL ratios are less than 1.0 indicating that gaseous effluent releases from an assumed core load of 2,496 TPBARs would be within the limits of 10 CFR part 20.

To determine whether the gaseous effluent releases would be consistent with the ALARA dose objectives set forth in appendix I to 10 CFR part 50 (which are per-unit numbers), TVA calculated bounding public doses from the applicable plant effluent dose pathways with the tritium release attributable to TPBAR permeability. These doses were based on an assumed core load of 2,496 TPBARs and the methods and assumptions in the current Watts Bar ODCM. TVA calculated that the whole-body dose to a Maximally Exposed Individual from a single Watts Bar unit would be 0.60 millirem (mrem) (0.0060 millisievert (mSv)), which is much less than the whole-body dose objective in appendix I to 10 CFR part 50 of 5.00 mrem (0.05 mSv). TVA also calculated that the organ dose (bone) to the Maximally Exposed Individual from a single Watts Bar unit would be 11.30 mrem (0.113 mSv), which is less than the organ dose objective in appendix I to 10 CFR part 50 of 15.00 mrem (0.15 mSv).

Based on this information, TVA's analyses demonstrate that Watts Bar, Units 1 and 2, can be operated with the proposed maximum core loading of 2,496 TPBARs such that the current GWMS can maintain the gaseous effluents within the Effluent Concentration Limits listed in 10 CFR part 20, appendix B, to meet the dose limit requirements to members of the public in 10 CFR 20.1301, as well as to maintain doses to the public ALARA as per the dose objectives set forth in appendix I to 10 CFR part 50. Therefore, there would be no significant radiological effect on the quality of the human environment from gaseous effluents.

#### Radioactive Liquid Effluents

The Watts Bar units' liquid radioactive waste system (LRWS) is used to collect and process radioactive liquid wastes to reduce radioactivity and chemical concentrations to levels acceptable for discharge to the environment. The LRWS maintains sufficient processing capability so that liquid waste may be discharged to the

environment below the regulatory limits of 10 CFR 20.1301 and consistent with the ALARA dose objectives in appendix I to 10 CFR part 50. The Watts Bar units share three large storage tanks in the LRWS, which includes a tritiated water storage tank with a capacity of 500,000 gallons. This storage tank supports managing large volume/high tritium concentrations in the RCS for both units. These storage tanks can be used for liquid effluent holdup, dilution, and timing of releases to ensure that regulatory requirements are met. The release of radioactive liquids from the LRWS only occurs after laboratory analysis of the storage tank contents. If the activity is found to be above ODCM limits, the liquid waste streams are returned to the system for further processing by a mobile demineralizer. If the activity is found to be below the ODCM limits, the liquid waste stream is pumped to a discharge pipe where it is monitored for radiation levels and flowrate before it enters the cooling tower blowdown line, where it can ultimately be discharged by permit into the Tennessee River.

To determine whether the liquid effluents from an assumed core load of 2,496 TPBARs would be within the requirements of 10 CFR 20.1301, TVA calculated the sum of the ratios of each isotope concentration (C) to its corresponding liquid Effluent Concentration Limit (ECL, as listed in 10 CFR part 20, appendix B, table 2, column 2). Consistent with the requirements of 10 CFR 20.1302(b)(2)(i), a C/ECL sum of less than 1.0 indicates that the annual average effluent release is within the limits of 10 CFR 20.1301. Tables 4.11-3 through 4.11-5 of the license amendment request show TVA's calculated C/ECL sums for liquid effluent releases from an assumed core load of 2,496 TPBARs. Table 4.11-3 indicates that extended effluent releases, without processing the liquid radioactive waste streams through the mobile demineralizer or allowing for sufficient dilution of the radioactive waste streams, would not meet the regulatory requirements of 10 CFR 20.1301. The calculated C/ECL for a single Watts

Bar unit in this scenario is 5.28, which is greater than the maximum allowable C/ECL of 1.0. The operation of both Watts Bar, Units 1 and 2 in this scenario would yield a C/ECL of 10.6.

Table 4.11-4 of the license amendment request demonstrates that TVA's calculated C/ECL sum for liquid effluent releases for a single Watts Bar unit processed through the mobile demineralizer would be 0.471. The operation of both Watts Bar, Units 1 and 2 in this scenario would yield a C/ECL of 0.942. Table 4.11-5 demonstrates that TVA's calculated C/ECL for liquid effluents not processed through the mobile demineralizer, but sufficiently diluted before release, for a single Watts Bar unit would be 0.476. The operation of both Watts Bar, Units 1 and 2 in this scenario would yield a C/ECL of 0.952. Therefore, the licensee demonstrated that the C/ECL ratios are less than 1.0 indicating that liquid effluent releases from an assumed core load of 2,496 TPBARs would be within the limits of 10 CFR part 20.

To determine whether the liquid effluent releases would be consistent with the ALARA dose objectives set forth in appendix I to 10 CFR part 50, TVA calculated bounding public doses from the applicable plant effluent dose pathways with the tritium release attributable to TPBAR permeability. These doses were based on an assumed core load of 2,496 TPBARs and the methods and assumptions in the current Watts Bar ODCM. TVA calculated that the whole-body dose to a Maximally Exposed Individual from liquid effluents from a single Watts Bar unit would be 0.39 mrem (0.0039 mSv), which is much less than the whole-body dose objective in appendix I to 10 CFR part 50 of 3.00 mrem (0.03 mSv). TVA also calculated that the organ dose (liver) to the Maximally Exposed Individual from liquid effluents from a single Watts Bar unit would be 0.50 mrem (0.0050 mSv), which is much less than the organ dose objective in appendix I to 10 CFR part 50 of 10 mrem (0.10 mSv).

Based on this information, TVA's analyses demonstrate that by processing liquid radioactive waste streams through the demineralizer or allowing for proper dilution of the liquid radioactive waste streams, the current LRWS can maintain the liquid effluents within the Effluent Concentration Limits listed in 10 CFR part 20, appendix B, such that Watts Bar, Units 1 and 2, can be operated with the proposed maximum core loading of 2,496 TPBARs. Specifically, doses from liquid effluents would meet the requirements regarding members of the public in 10 CFR 20.1301, as well as maintain the public ALARA dose objectives set forth in appendix I to 10 CFR part 50. Therefore, there would be no significant radiological effect on the quality of the human environment from liquid effluents.

#### Solid Radioactive Wastes

Solid radioactive wastes generated by nuclear power plant operations at Watts Bar, Units 1 and 2, are processed, packaged, and stored onsite until they are shipped offsite for further processing or permanent disposal, or both. The storage areas have restricted access and shielding to reduce radiation rates to plant workers. Solid radioactive wastes are packaged and transported in compliance with the NRC's regulations in 10 CFR parts 20, 61, "Licensing Requirements for Land Disposal of Radioactive Waste," and 71, "Packaging and Transportation of Radioactive Material," and the U.S. Department of Transportation's regulations in 49 CFR parts 170 through 179.

The implementation of the proposed action of allowing an increase in the number of TPBARs irradiated from 1,792 to 2,496 per reactor core would increase the activity and volume of solid radioactive waste due to the irradiation of the TPBAR base plates and thimble plugs, which remain after TPBAR consolidation activities. As explained in a previous license amendment request, for the consolidation process, nuclear plant

operators remove the irradiated TPBAR assemblies from the spent fuel assemblies, disassemble all the irradiated TPBARs for consolidation, and place them into consolidation canisters. The operators return the loaded consolidation canisters to the spent fuel racks, where they remain until removed from the site (ADAMS Accession No. ML17354B282). Offsite shipment and ultimate disposal would be conducted in accordance with agreements between TVA and the DOE. The disposal volume of the TPBAR base plates and thimble plugs is estimated to be 64 cubic feet (2.7 cubic meters) per year. This additional volume represents a slight increase in the Watts Bar, Units 1 and 2, annual estimated solid waste generation from approximately 32,854 cubic feet (930 cubic meters) per year to 32,918 cubic feet (933 cubic meters) per year. This projected increase in volume can be handled by the existing equipment and plant procedures that control radioactive solid waste handling without modification. The licensee estimated the TPBAR cycle scope of work to evaluate the doses that are expected to workers during the TPBAR consolidation process. The TPBAR cycle scope, estimated at 1,200 person-hours per cycle, includes pre-cycle preparation activities, post-cycle removal and handling activities, TPBAR consolidation and shipping activities, and the processing, packaging, and shipping of irradiated components. This work will occur in an estimated 0.33 mrem/hour radiation field. Therefore, while there would be an increase in solid radioactive waste associated with the implementation of the proposed action, the existing equipment and plant procedures that control radioactive solid waste handling would continue to be used to maintain doses to members of the public and plant workers within applicable dose limits. Therefore, based on this information, there would be no significant radiological effect on the quality of the human environment from solid radioactive waste management.

### Spent Fuel Generation, Storage, and Handling

The number of spent fuel bundles would increase by approximately four to eight per cycle with the implementation of the proposed action. For Watts Bar, Units 1 and 2, spent fuel is currently stored in spent fuel pools on site and in an independent spent fuel storage installation. There would be adequate spent fuel storage available on site; therefore, based on this information, there would be no significant radiological effect on the quality of the human environment from spent fuel generation, storage, and handling.

### Occupational Radiation Doses

At Watts Bar, Units 1 and 2, TVA maintains a radiation protection program to monitor radiation levels throughout the nuclear power plant to establish appropriate work controls, training, temporary shielding, and protective equipment requirements so that worker doses remain within the dose limits of 10 CFR part 20, subpart C, "Occupational Dose Limits." The implementation of the proposed action would affect the quantities of radioactive material generated during plant operations since some tritium permeates through the TPBAR cladding and is released into the RCS, as previously described.

Separate from the environmental review for this EA, the NRC is reviewing the technical and safety analyses provided in TVA's license amendment request to ensure that the licensee continues to meet NRC regulatory requirements for occupational dose. The results of this safety review will be documented in a safety evaluation that will be made publicly available following the issuance of the EA. If the NRC's safety review determines that the irradiation of 2,496 TPBARs, per cycle, in Watts Bar, Units 1 and 2, complies with the NRC's regulations for occupational dose, then the proposed license amendments would not have a significant radiological effect on workers.

### Design-Basis Accidents

Design-basis accidents are evaluated to ensure that Watts Bar, Units 1 and 2, can withstand the spectrum of postulated accidents without undue hazard to public health and safety and ensure the protection of the environment.

TVA's technical and safety analyses must meet the NRC's regulatory requirements for safe operation. The results of the NRC's safety review will be made publicly available following the issuance of the EA. If this safety review determines that the irradiation of 2,496 TPBARs, per cycle, in the Watts Bar, Units 1 and 2, cores comply with the NRC's regulations, and there is reasonable assurance that public health and safety will not be endangered, then the proposed license amendments would not have a significant radiological effect on the quality of the human environment from design-basis accidents.

### Radiological Impacts Summary

Based on the radiological evaluations presented in this EA, except for the impacts associated with occupational radiation doses and design-basis accidents which are being reviewed separately, the implementation of the proposed action would not have a significant radiological effect on the quality of the human environment. If the NRC's safety review determines that 2,496 TPBARs, per cycle, can be safely irradiated in Watts Bar, Units 1 and 2, and there is reasonable assurance that public health and safety will not be endangered, then implementing the proposed license amendments would not have a significant radiological effect on workers and the quality of the human environment.

### *Environmental Impacts of the Alternatives to the Proposed Action*

As an alternative to the proposed action, the NRC considered denial of the proposed action (i.e., the "no-action" alternative). Denial of the license amendment



request would mean that TVA would be allowed to continue irradiating the current allowable number of TPBARs (i.e., 1,792) for Watts Bar, Units 1 and 2. The environmental impacts of irradiating 1,792 TPBARs were previously considered and were determined to not have any significant radiological or non-radiological effect on the quality of the human environment. Therefore, the NRC concludes that denial of the license amendment request (i.e., the “no-action” alternative) would result in no change in current environmental effects, and would be not significant. The impacts of the “no-action” alternative would be similar to the impacts of the proposed action.

#### *Alternative Use of Resources*

There are no unresolved conflicts concerning alternative uses of available resources under the proposed action.

#### *Agencies and Persons Consulted*

On November 7, 2023, the NRC staff consulted with the State of Tennessee, regarding the environmental impact of the proposed action. The state official had no comments on the EA and FONSI.

### **III. Finding of No Significant Impact**

TVA requests that the NRC approve amendments that would revise the Watts Bar, Units 1 and 2, TS 4.2.1 and TS 5.9.6 to increase the maximum number of TPBARs and to add supporting methodologies. The proposed amendments would also revise the Watts Bar Dual-Unit Updated Final Safety Analysis Report to modify the source term for design basis accident analyses to allow the core fission product inventory to be calculated using an updated version of the ORIGEN computer code. Based on the review of available information, the NRC determined that the proposed action would not have any significant radiological or non-radiological environmental impacts. Also, the impacts of the “no-action” alternative would be similar to the impacts of the proposed

action. The NRC also considered the information provided in the licensee’s application and related TVA environmental documents.

Consistent with 10 CFR 51.21, the NRC conducted an environmental review of the proposed action and, in accordance with 10 CFR 51.32(a)(4), this FONSI incorporates the EA in Section II of this document by reference. Therefore, the NRC concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the NRC has determined not to prepare an environmental impact statement for the proposed action.

This FONSI and related environmental documents are available for public inspection online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC’s PDR reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by email to [PDR.Resource@nrc.gov](mailto:PDR.Resource@nrc.gov).

#### **IV. Availability of Documents**

The documents identified in the following table are available to interested persons through ADAMS, as indicated.

<b>DOCUMENT DESCRIPTION</b>	<b>ADAMS ACCESSION No./ FEDERAL REGISTER CITATION</b>
Application to Revise Watts Bar Nuclear Plant Units 1 and 2 Technical Specifications to Change the Number of Tritium Producing Burnable Absorber Rods (WBN-TS-21-02) and Proposed Revision to Reactor Vessel Surveillance Capsule Removal Schedule for Units 1 and 2, dated March 20, 2023.	ML23079A270
Watts Bar Nuclear Plant, Unit 1 - Issuance of Amendment Regarding Revised Technical Specification 4.2.1 “Fuel Assemblies” to Increase the Maximum Number of Tritium Producing Burnable Absorber Rods (CAC No. MF6050), dated July 29, 2016.	ML16159A057

Watts Bar Nuclear Plant, Units 1 and 2 - Issuance of Amendment Regarding Revision to Watts Bar Nuclear Plant, Unit 2, Technical Specification 4.2.1, "Fuel Assemblies," and Watts Bar Nuclear Plant, Units 1 and 2, Technical Specifications Related to Fuel Storage (EPID L-2017-LLA-0427), dated May 22, 2019.	ML18347B330
Watts Bar Nuclear Plant, Unit 1, Environmental Assessment and Finding of No Significant Impact <i>Federal Register</i> notice related to License Amendment Request to Revise Technical Specification 4.2.1, "Fuel Assemblies," dated June 23, 2016.	ML16138A045 81 FR 43656
Watts Bar Nuclear Plant, Units 1 and 2, Environmental Assessment and Finding of No Significant Impact <i>Federal Register</i> notice related to License Amendment Request to Revise Technical Specification 4.2.1, "Fuel Assemblies," dated February 6, 2019.	ML18332A013 84 FR 3259
Watts Bar Nuclear Power Plant, Units 1 and 2, 2022 Annual Radioactive Effluent Release Report, dated April 27, 2023.	ML23117A100
Application to Revise Watts Bar Unit 2 Technical Specification 4.2.1, "Fuel Assemblies," and Watts Bar Units 1 and 2 Technical Specifications Related to Fuel Storage (WBN-TS-17-028), dated December 20, 2017.	ML17354B282

Dated: February 16, 2024

For the Nuclear Regulatory Commission.

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Kimberly J. Green, Senior Project Manager,  
Licensing Projects Branch II-2,  
Division of Operating Reactor Licensing,  
Office of Nuclear Reactor Regulation.

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT RELATED TO AN INCREASE IN THE MAXIMUM NUMBER OF TRITIUM PRODUCING BURNABLE ABSORBER RODS (EPID L-2023-LLA-0039) DATED FEBRUARY 16, 2024

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**ADAMS Accession Nos.**

**Package ML24009A177**

**Letter (NRR-106) ML24009A171**

**EA FRN (ADM-012) ML24009A172**

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LA	NMSS/REFS/ERLRB/BC
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DATE	01/09/24	01/10/24	01/19/24
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