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

April 16, 2025

Mr. Delson C. Erb
Vice President, OPS Support
Tennessee Valley Authority
1101 Market Street, LP 4A-C
Chattanooga, TN 37402-2801

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENT NOS. 175 AND 80 REGARDING ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE TRAVELER TSTF-276-A, REVISION 2, "REVISE DG [DIESEL GENERATOR] FULL LOAD REJECTION TEST" (EPID L-2024-LLA-0086)

Dear Mr. Erb:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 175 to Facility Operating License No. NPF-90 and Amendment No. 80 to Facility Operating License No. NPF-96 for the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2, respectively. These amendments are in response to your application dated June 25, 2024, as supplemented by letter dated January 16, 2025.

The amendments revise Watts Bar, Units 1 and 2, Technical Specification 3.8.1, "AC Sources – Operating," to reflect the adoption of Technical Specification Task Force (TSTF) Traveler TSTF-276-A, Revision 2, "Revise DG full load rejection test," with variations, and also revise Surveillance Requirements (SRs) 3.8.1.10 and SR 3.8.1.14 to remove the surveillance kVAR ranges and modify the note to SR 3.8.1.18 to allow for the surveillance to be performed in Modes 1, 2, 3, or 4 to reestablish operability provided an assessment of plant safety is performed.

A copy of our related safety evaluation is also enclosed. A notice of issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

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

Enclosures:
1. Amendment No. 175 to NPF-90
2. Amendment No. 80 to NPF-96
3. Safety Evaluation

cc: Listserv

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-390

WATTS BAR NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 175
License No. NPF-90

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (TVA, the licensee) dated June 25, 2024, as supplemented by letter dated January 16, 2025, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-90 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A as revised through Amendment No. 175 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

DAVID WRONA

Digitally signed by DAVID WRONA
Date: 2025.04.16 15:36:24 -04'00'

David Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: April 16, 2025

ATTACHMENT TO AMENDMENT NO. 175

WATTS BAR NUCLEAR PLANT, UNIT 1

FACILITY OPERATING LICENSE NO. NPF-90

DOCKET NO. 50-390

Replace page 3 of Facility Operating License No. NPF-90 with the attached revised page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace the following pages of the Appendix A, Technical Specifications, with the attached pages. The revised pages are identified by amendment number and contain a marginal line indicating the area of change.

Remove Pages	Insert Pages
3.8-9	3.8-9
--	3.8-9a
3.8-12	3.8-12
3.8-14	3.8-14

(4) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis, instrument calibration, or other activity associated with radioactive apparatus or components; and

(5) TVA, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

TVA is authorized to operate the facility at reactor core power levels not in excess of 3459 megawatts thermal.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 175 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Safety Parameter Display System (SPDS) (Section 18.2 of SER Supplements 5 and 15)

Prior to startup following the first refueling outage, TVA shall accomplish the necessary activities, provide acceptable responses, and implement all proposed corrective actions related to having the Watts Bar Unit 1 SPDS operational.

(4) Vehicle Bomb Control Program (Section 13.6.9 of SSER 20)

During the period of the exemption granted in paragraph 2.D.(3) of this license, in implementing the power ascension phase of the approved initial test program, TVA shall not exceed 50% power until the requirements of 10 CFR 73.55(c)(7) and (8) are fully implemented. TVA shall submit a letter under oath or affirmation when the requirements of 73.55(c)(7) and (8) have been fully implemented.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	----------NOTES---------- 1. For DGs 1A-A and 1B-B, this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 6555 V and ≤ 7260 V; and c. Within 4 seconds following load rejection, the frequency is ≥ 59.8 Hz and ≤ 60.1 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	----------NOTES---------- 1. For DGs 1A-A and 1B-B, this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG does not trip and voltage is maintained ≤ 8880 V during and following a load rejection of ≥ 3960 kW and ≤ 4400 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	----------NOTE---------- For DGs 1A-A and 1B-B, this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each DG's automatic trips are bypassed on automatic or emergency start signal except: a. Engine overspeed; and b. Generator differential current.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. For performance of this test in MODE 1, 2, 3 or 4, three DGs must be maintained operable and in a standby condition. 3. Credit may be taken for unplanned events that satisfy this SR. 4. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4620 kW and ≤ 4840 kW; and b. For the remaining hours of the test loaded ≥ 3960 kW and ≤ 4400 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify, with each Unit 1 DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	----------NOTE---------- For DGs 1A-A and 1B-B, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify the time delay setting for each sequenced load block is within limits for each accident condition and non-accident condition load sequence.	In accordance with the Surveillance Frequency Control Program

(continued)

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-391

WATTS BAR NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 80
License No. NPF-96

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Tennessee Valley Authority (TVA, the licensee) dated June 25, 2024, as supplemented by letter dated January 16, 2025, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-96 is hereby amended to read as follows:

   (2) Technical Specifications and Environmental Protection Plan

   The Technical Specifications contained in Appendix A as revised through Amendment No. 80 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

DAVID WRONA

Digitally signed by DAVID WRONA
Date: 2025.04.16 15:36:53 -04'00'

David Wrona, Chief
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Operating License
and Technical Specifications

Date of Issuance: April 16, 2025

ATTACHMENT TO AMENDMENT NO. 80

WATTS BAR NUCLEAR PLANT, UNIT 2

FACILITY OPERATING LICENSE NO. NPF-96

DOCKET NO. 50-391

Replace page 3 of Facility Operating License No. NPF-96 with the attached revised page 3. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Replace the following pages of the Appendix A, Technical Specifications, with the attached pages. The revised pages are identified by amendment number and contain a marginal line indicating the area of change.

Remove Pages	Insert Pages
3.8-7	3.8-7
--	3.8-7a
3.8-10	3.8-10
3.8-11	3.8-11
3.8-12	3.8-12
3.8-13	3.8-13

C. The license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect, and is subject to the additional conditions specified or incorporated below.

(1) Maximum Power Level

TVA is authorized to operate the facility at reactor core power levels not in excess of 3459 megawatts thermal.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 80 and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. TVA shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) TVA shall implement permanent modifications to prevent overtopping of the embankments of the Fort Loudon Dam due to the Probable Maximum Flood by June 30, 2018.

(4) FULL SPECTRUM LOCA Methodology shall be implemented when the WBN Unit 2 steam generators are replaced with steam generators equivalent to the existing steam generators at WBN Unit 1.

(5) By December 31, 2019, the licensee shall report to the NRC that the actions to resolve the issues identified in Bulletin 2012-01, "Design Vulnerability in Electrical Power System," have been implemented.

(6) The licensee shall maintain in effect the provisions of the physical security plan, security personnel training and qualification plan, and safeguards contingency plan, and all amendments made pursuant to the authority of 10 CFR 50.90 and 50.54(p).

(7) TVA shall fully implement and maintain in effect all provisions of the Commission approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The TVA approved CSP was discussed in NUREG-0847, Supplement 28, as amended by changes approved in License Amendment No. 7.

(8) TVA shall implement and maintain in effect all provisions of the approved fire protection program as described in the Fire Protection Report for the facility, as described in NUREG-0847, Supplement 29, subject to the following provision:

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	----------NOTE---------- 1. For DGs 2A-A and 2B-B, this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ 66.75 Hz; b. Within 3 seconds following load rejection, the voltage is ≥ 6555 V and ≤ 7260 V; and c. Within 4 seconds following load rejection, the frequency is ≥ 59.8 Hz and ≤ 60.1 Hz.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.10	----------NOTES---------- 1. For DGs 2A-A and 2B-B, this Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG does not trip and voltage is maintained ≤ 8880 V during and following a load rejection of ≥ 3960 kW and ≤ 4400 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.14	----------NOTES---------- 1. Momentary transients outside the load and power factor ranges do not invalidate this test. 2. For performance of this test in MODE 1, 2, 3 or 4, three DGs must be maintained operable and in a standby condition. 3. Credit may be taken for unplanned events that satisfy this SR. 4. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. ---------- Verify each DG operates for ≥ 24 hours: a. For ≥ 2 hours loaded ≥ 4620 kW and ≤ 4840 kW; and b. For the remaining hours of the test loaded ≥ 3960 kW and ≤ 4400 kW.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	----------NOTES---------- This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3960 kW and ≤ 4400 kW. Momentary transients outside of load range do not invalidate this test. ---------- Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 6800 V, and frequency ≥ 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 59.8 Hz and ≤ 60.1 Hz.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.16	----------NOTE---------- For DGs 2A-A and 2B-B, this Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.17	----------NOTE---------- For DGs 2A-A and 2B-B, this Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify, DG 2A-A and 2B-B operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation; and b. Automatically energizing the emergency load from offsite power.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.18	----------NOTE---------- For DGs 2A-A and 2B-B, this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify the time delay setting for each sequenced load block is within limits for each accident condition and non-accident condition load sequence.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	----------NOTE---------- For DGs 2A-A and 2B-B, this Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through load sequencer, 3. achieves steady state voltage: ≥ 6800 V and ≤ 7260 V, 4. achieves steady state frequency ≥ 59.8 Hz and ≤ 60.1 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.20	Verify during idle operation that any automatic or emergency start signal disables the idle start circuitry and commands the engine to full speed.	In accordance with the Surveillance Frequency Control Program
SR 3.8.1.21	Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 59.8 Hz and ≤ 60.1 Hz.	In accordance with the Surveillance Frequency Control Program

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 175 AND 80

TO FACILITY OPERATING LICENSE NOS. NPF-90 AND NPF-96

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-390 AND 50-391

1.0 INTRODUCTION

By application dated June 25, 2024 (Agencywide Documents Access and Management System Accession No. ML24178A413), as supplemented by letter dated January 16, 2025 (ML25016A200), the Tennessee Valley Authority (TVA, the licensee), submitted a license amendment request (LAR) for Watts Bar Nuclear Plant (Watts Bar or WBN), Units 1 and 2. The requested changes would revise each unit's Technical Specification (TS) 3.8.1, "AC [Alternating Current] Sources – Operating," based on Technical Specification Task Force (TSTF) Traveler TSTF-276-A, Revision 2, "Revise DG [Diesel Generator] full load rejection test" (ML003672387), and the associated U.S. Nuclear Regulatory Commission (NRC or the Commission) staff approval of TSTF-276 (ML003730788).

Specifically, the proposed changes would revise the NOTES for Surveillance Requirement (SR) 3.8.1.9, for the DG single largest load rejection test; SR 3.8.1.10, for the DG full load rejection test; and SR 3.8.1.14, for the DG endurance and margin test, to require that these SRs be performed at a specified power factor of ≤ 0.9 with clarifications addressing situations when the power factor cannot be achieved. Also, the proposed changes would revise the NOTE for SR 3.8.1.18 to allow the surveillance to be performed to reestablish operability provided an assessment is performed to determine plant safety. The proposed amendments would also revise SR 3.8.1.10 and SR 3.8.1.14 to remove the surveillance kVAR ranges and modify the note to SR 3.8.1.18 to allow for the surveillance to be performed in Modes 1, 2, 3, or 4 to reestablish operability provided an assessment of plant safety is performed.

The supplement dated January 16, 2025, corrected a proposed change to the TS Bases, which did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on September 3, 2024 (89 FR 71437).

2.0 REGULATORY EVALUATION

2.1 System Description

As described in section 2.2 of the enclosure to the LAR, and sections 8.2 and 8.3 of the Watts Bar Dual-Unit Updated Final Safety Analysis Report (UFSAR) (ML23346A225), the AC electrical power distribution system AC sources at WBN, Units 1 and 2, consist of the offsite power sources (preferred power sources, normal and alternate(s)), and the onsite standby power sources (Train A and Train B DGs). As required by Part 50 to Title 10 of the *Code of Federal Regulations* (10 CFR 50), Appendix A, General Design Criteria (GDC) 17, the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the engineered safety feature (ESF) systems.

The onsite Class 1E AC distribution system supplies electrical power to four power trains, shared between the two units, with each train powered by an independent Class 1E 6.9 kilovolt (kV) shutdown board. Two DGs associated with one load group can provide the safety-related functions to mitigate a loss-of-coolant accident (LOCA) in one unit and safely shutdown the opposite unit. Each 6.9 kV shutdown board has two separate and independent offsite sources of power as well as a dedicated onsite DG source.

In the event of a loss of preferred power, the 6.9 kV shutdown boards are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a design basis accident such as a LOCA.

2.2 Proposed Change to Technical Specifications

As described in section 2.1 of the enclosure to the LAR, the licensee proposed the following changes to the Watts Bar, Units 1 and 2, TSs. Proposed changes are marked by ~~strike-through~~ text for deletions and **bold** text for additions.

1. NOTE 2 of the Units 1 and 2 SR 3.8.1.9 (Verify each DG rejects a load greater than or equal to its associated single largest post-accident load) is proposed to be revised as follows:

   > If performed with the DG synchronized with offsite power, it shall be performed at a power factor ~~≥ 0.8 and~~ ≤ 0.9. **However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.**

2. The wording of Units 1 and 2 SR 3.8.1.10 is proposed to be revised as follows:

   > Verify each DG ~~operating at a power factor ≥ 0.8 and ≤0.9~~ does not trip and voltage is maintained ≤ 8880 V during and following a load rejection of ≥ 3960 kW and ≤ 4400 kW ~~and ≥ 2970 kVAR and ≤ 3300 kVAR~~.

   In addition, NOTE 2 is proposed to be added to Units 1 and 2 SR 3.8.1.10 stating the following:

   > **If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this**

condition the power factor shall be maintained as close to the limit as practicable.

3. The wording of Units 1 and 2 SR 3.8.1.14 is proposed to be revised as follows:

   Verify each DG ~~operating at a power factor ≥ 0.8 and ≤ 0.9~~ operates for ≥ 24 hours:

   a. For ≥ 2 hours loaded ≥ 4620 kW and ≤ 4840 kW ~~and ≥ 3465 kVAR and ≤ 3630 kVAR~~; and

   b. For the remaining hours of the test loaded ≥ 3960 kW and ≤ 4400 kW ~~and ≥ 2970 kVAR and ≤ 3300 kVA~~R.

   In addition, NOTE 4 is proposed to be added to SR 3.8.1.14 stating the following:

   If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.

4. NOTE of the Unit 1 SR 3.8.1.18 (Verify the time delay setting for each sequenced load block is within limits for each accident condition and non-accident condition load sequence) is proposed to be revised as follows:

   For DGs 1A-A and 1B-B, this Surveillance shall not **normally** be performed in MODE 1, 2, 3, or 4. However, **this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. C**redit may be taken for unplanned events that satisfy this SR**.**

5. NOTE of the Unit 2 SR 3.8.1.18 (Verify the time delay setting for each sequenced load block is within limits for each accident condition and non-accident condition load sequence) is proposed to be revised as follows:

   For DGs 2A-A and 2B-B, this Surveillance shall not **normally** be performed in MODE 1, 2, 3, or 4. However, **this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. C**redit may be taken for unplanned events that satisfy this SR**.**

The licensee identified the following proposed variations from TSTF-276-A, Revision 2. The proposed changes associated with these variations are reflected in the proposed changes described above.

- SR 3.8.1.10 would be revised by removing “and ≥ 2970 kVAR and ≤ 3300 kVAR” from the surveillance.

- SR 3.8.1.14 would be revised by removing “and ≥ 3465 kVAR and ≤ 3630 kVAR” from 3.8.1.14.a and removing “and ≥ 2970 kVAR and ≤ 3300 kVAR” from 3.8.1.14.b.

- SR 3.8.1.18 would be revised by adding the word “normally” to the first sentence of the note to indicate “this Surveillance shall not normally be performed in MODE 1, 2, 3, or 4.” The note is further revised by adding the sentence: “However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.”

- The existing Notes in SR 3.8.1.14 differ from TSTF-276 and the NUREG-1431[1], but were approved by the NRC for WBN, Unit 1 in Amendment 12 (ML020780203). Additionally, the existing Notes in SR 3.8.1.9, SR 3.8.1.10, and SR 3.8.1.18 differ from TSTF-276 and the STS, but were approved by the NRC for WBN, Unit 1 in Amendment 89 (ML11234A258). These same variations were incorporated into the initial TS for WBN, Unit 2 (ML15251A587).

- Minor TS page renumbering revisions are proposed for WBN, Units 1 and 2, SR 3.8.1.10.

2.3 Applicable Regulatory Requirements and Guidance

Under 10 CFR 50.90, “Application for amendment of license, construction permit, or early site permit,” whenever a holder of a license wishes to amend the license, including TSs in the license, an application for amendment must be filed, fully describing the changes desired. Under 10 CFR 50.92(a), determinations on whether to grant an applied-for license amendment are to be guided by the considerations that govern the issuance of initial licenses to the extent applicable and appropriate. Both the common standards for licenses in 10 CFR 50.40(a), and those specifically for issuance of operating licenses in 10 CFR 50.57(a)(3), provide that there must be reasonable assurance that the activities at issue will not endanger the health and safety of the public, and that the applicant will comply with the Commission’s regulations.

Appendix A, “General Design Criteria for Nuclear Power Plants,” to 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities,” establishes the minimum requirements for the principal design criteria for water-cooled nuclear power plants. The principal design criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety. According to section 3.1.1 of the Watts Bar Dual-Unit UFSAR, the plant was designed to meet the intent of the “Proposed General Design Criteria for Nuclear Power Plant Construction Permits,” published in July 1967. The Watts Bar construction permits were issued in January 1973. The Watts Bar plant, in general, meets the intent of the NRC GDC published as Appendix A to 10 CFR Part 50 in July 1971, as discussed in UFSAR section 3.1.2. The NRC staff considered the following GDC during its review:

- GDC 17, “Electric power systems,” states, in part, that an onsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The onsite electric power supplies including the batteries and the onsite electric distribution system shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure. In addition, this criterion requires provisions to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated

1 U.S. Nuclear Regulatory Commission, “Standard Technical Specifications, Westinghouse Plants,” NUREG-1431, Volume 1, “Specifications,” and Volume 2, “Bases,” Revision 5, September 2021 (ML21259A155 and ML21259A159, respectively).

by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

- GDC 18, "Inspection and testing of electric power systems," states, in part, that electric power systems important to safety be designed to permit appropriate periodic inspection and testing to demonstrate operability and functional performance.

The Commission's regulatory requirements related to the content of TSs are set forth in 10 CFR 50.36, "Technical Specifications," which requires, in part, that the TSs include items in eight specific categories: (1) safety limits, limiting safety system settings and limiting control settings; (2) limiting conditions for operation (LCO); (3) SRs; (4) design features; (5) administrative controls; (6) decommissioning; (7) initial notification; and (8) written reports.

The licensee's request involves a revision to SRs. As described in 10 CFR 50.36(c)(3), SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

The staff considered the following NRC guidance document to evaluate the LAR:

The NRC staff's guidance for the review of TSs is in NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," Chapter 16.0, "Technical Specifications," Revision 3, dated March 2010 (ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared Standard Technical Specifications for each of the LWR nuclear designs. Accordingly, the NRC staff's review includes consideration of whether the proposed changes are consistent with NUREG-1431, as modified by NRC-approved travelers.

3.0 TECHNICAL EVALUATION

The NRC staff's review of the licensee's request, as described in the LAR and supplement, was conducted using the regulatory requirements described in section 2.3 of this safety evaluation and is documented in the following subsections.

In the LAR, regarding SR 3.8.1.9, SR 3.8.1.10, and SR 3.8.1.14, the licensee stated:

> WBN Units 1 and 2 perform SR 3.8.1.9, SR 3.8.1.10, and SR 3.8.1.14 with the DG synchronized with offsite power. When the DG is synchronized with offsite power, a power factor of ≤ 0.9 is representative of the inductive loading a DG would experience under design basis accident conditions. When the DG is not synchronized with offsite power, the power factor is determined by plant load and cannot be adjusted. Also, adequate load may not be available, or it could be difficult to achieve the loads required by the surveillances.
>
> A power factor of ≤ 0.9 should normally be able to be achieved when performing this surveillance test at power and synchronized with offsite power. Therefore, a power factor of ≤ 0.9 is desired when performing these surveillances. However, under certain grid conditions, this power factor may not be achievable. When grid voltage is higher than typical, the additional field excitation current required to achieve a power factor ≤ 0.9 results in ESF bus voltage exceeding the maximum steady state voltage limit. Increased grid voltage typically occurs when the plant

> is shutdown, and the loads on the associated ESF transformer are too light to lower the voltage sufficiently to achieve a 0.9 power factor. Under these conditions, the power factor should be maintained as close as practicable to a 0.9 power factor while still maintaining acceptable voltage limits on the ESF busses. In other circumstances, the grid voltage may be such that the DG excitation levels needed to obtain a power factor of 0.9 may not cause unacceptable voltages on the emergency busses, but the excitation levels are greater than those recommended for the DG. In such cases, the power factor shall be maintained as close as practicable to 0.9 without exceeding DG excitation limits.

In the LAR, regarding SR 3.8.1.9, SR 3.8.1.10, and SR 3.8.1.14, the licensee also stated:

> The proposed changes to SR 3.8.1.9, SR 3.8.1.10, and SR 3.8.1.14 to require that they be performed at a power factor of ≤ 0.9, if performed with the DG synchronized to offsite power unless grid conditions do not permit, are consistent with NRC approved traveler TSTF-276-A, Revision 2. The proposed changes require the DG to be tested under load conditions that are as close to design basis conditions as possible. Under certain conditions, however, the proposed changes allow the surveillance to be conducted at a power factor other than ≤ 0.9.

In the LAR, regarding SR 3.8.1.18, the licensee stated:

> The change to the note for SR 3.8.1.18 would allow performance of this surveillance in Modes 1, 2, 3, or 4 to reestablish operability provided an assessment of plant safety is performed. This proposed change allows for flexibility in the performance of the surveillance with the appropriate considerations for the potential outcomes and transients associated with a failed surveillance, a successful surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when the surveillance is performed in MODE 1, 2, 3, or 4.

3.1.1 Evaluation of Change to SR 3.8.1.9

The licensee proposed to revise NOTE 2 of SR 3.8.1.9 (Verify each DG rejects a load greater than or equal to its associated single largest post-accident load) as follows:

> If performed with the DG synchronized with offsite power, it shall be performed at a power factor ~~≥ 0.8 and~~ ≤ 0.9. **However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.**

Based on its review, the NRC staff finds that the above change to SR 3.8.1.9 is consistent with the TSTF-276-A, Revision 2, as approved by the NRC, and with NUREG-1431, SR 3.8.1.9. The staff also finds that the change to the power factor value from "≥ 0.8 and ≤ 0.9" to "≤ 0.9" is reasonable because the power factor of ≤ 0.9 is representative of the inductive loading a DG would experience under design basis limiting accident condition based on the DG loading

values provided in the LAR and based on limiting grid conditions that may be present during the performance of the SR. Therefore, the staff finds that the proposed change to SR 3.8.1.9 is acceptable.

3.1.2 Evaluation of Changes to SR 3.8.1.10

The licensee proposed to revise the wording of SR 3.8.1.10 as follows, including the variation described in section 2.2 above:

> Verify each DG ~~operating at a power factor ≥ 0.8 and ≤0.9~~ does not trip and voltage is maintained ≤ 8880 V during and following a load rejection of ≥ 3960 kW and ≤ 4400 kW ~~and ≥ 2970 kVAR and ≤ 3300 kVAR~~.

In addition, NOTE 2 is proposed to be added to SR 3.8.1.10 stating the following:

> **If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.**

Based on its review, the NRC staff finds that the above addition of NOTE 2 to SR 3.8.1.10 is consistent with TSTF-276, Revision 2, as approved by the NRC, and with NUREG-1431, SR 3.8.1.10. The addition of NOTE 2 to SR 3.8.1.10 is also consistent with the corresponding NOTE 2 in SR 3.8.1.9 discussed above. The staff also finds that the specification of power factor and kVAR limits in the wording of SR 3.8.1.10 is no longer necessary considering the proposed addition of NOTE 2, and the revised wording of SR 3.8.1.10 is consistent with NUREG-1431, SR 3.8.1.10. Therefore, the NRC staff finds that the proposed changes to SR 3.8.1.10 are acceptable.

3.1.3 Evaluation of Changes to SR 3.8.1.14

The licensee proposed to revise the wording of SR 3.8.1.14 as follows, including the variation described in section 2.2 above:

> Verify each DG ~~operating at a power factor ≥ 0.8 and ≤ 0.9~~ operates for ≥ 24 hours:
>
> a. For ≥ 2 hours loaded ≥ 4620 kW and ≤ 4840 kW ~~and ≥ 3465 kVAR and ≤ 3630 kVAR~~; and
>
> b. For the remaining hours of the test loaded ≥ 3960 kW and ≤ 4400 kW ~~and ≥ 2970 kVAR and ≤ 3300 kVAR~~.

In addition, NOTE 4 is proposed to be added to SR 3.8.1.14 stating the following:

> **If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.9. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable.**

Based on its review, the NRC staff finds that the addition of NOTE 4 to SR 3.8.1.14 is consistent with TSTF-276 Revision 2, as approved by the NRC, and consistent with NUREG-1431, SR 3.8.1.14. The addition of NOTE 4 to SR 3.8.1.14 is also consistent with the corresponding NOTE 2 in SR 3.8.1.9 discussed above. The staff finds that the specification of power factor and kVAR limits in the wording of SR 3.8.1.14 is no longer necessary considering the proposed addition of NOTE 4, and the revised wording of SR 3.8.1.14 is consistent with NUREG 1431, SR 3.8.1.14. Therefore, the NRC staff finds that the proposed changes to SR 3.8.1.14 are acceptable.

3.1.4 Evaluation of Change to SR 3.8.1.18

The licensee proposed to revise the NOTES of the SR 3.8.1.18 (Verify the time delay setting for each sequenced load block is within limits for each accident condition and non-accident condition load sequence) as follows, including the variation described in section 2.2 above:

Unit 1 SR 3.8.1.18

> For DGs 1A-A and 1B-B, this Surveillance shall not **normally** be performed in MODE 1, 2, 3, or 4. However, **this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. C**redit may be taken for unplanned events that satisfy this SR**.**

Unit 2 SR 3.8.1.18

> For DGs 2A-A and 2B-B, this Surveillance shall not **normally** be performed in MODE 1, 2, 3, or 4. However, **this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced. C**redit may be taken for unplanned events that satisfy this SR**.**

Based on its review, the NRC staff finds that the above changes to WBN, Units 1 and 2, SR 3.8.1.18 are consistent with NUREG-1431, SR 3.8.1.18. According to the revised NOTE, the licensee will determine that the plant safety is maintained or enhanced when the surveillance is performed in MODE 1, 2, 3, or 4. Therefore, the NRC staff finds the proposed change to SR 3.8.1.18 is acceptable.

3.2 Technical Conclusion

Based on the above technical evaluation, the NRC staff concludes that the proposed changes will continue to require that the appropriate surveillances are performed for the DGs to verify their capability to not trip and maintain the required voltage and operate at the required loadings for the specified time. Additionally, the proposed changes to the TS 3.8.1, SRs 3.8.1.9, 3.8.1.10, 3.8.1.14, and 3.8.1.18, will continue to provide assurance that the necessary quality of systems and components is maintained, the facility will be within safety limits, and that the LCO will be met. Further, the NRC staff determined that the revised SRs will continue to meet 10 CFR 50.36(c)(3). Accordingly, the NRC staff finds that the proposed changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendment on March 21, 2025. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission previously issued a proposed finding that the amendment involves no significant hazards consideration published in the *Federal Register* on September 3, 2024 (89 FR 71437), and there has been no public comment on such finding. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: V. Goel, NRR
A. Foli, NRR
C. Ashley, NRR

Date: April 16, 2025

SUBJECT: WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENT NOS. 175 AND 80 REGARDING ADOPTION OF TECHNICAL SPECIFICATION TASK FORCE TRAVELER TSTF-276-A, REVISION 2, "REVISE DG [DIESEL GENERATOR] FULL LOAD REJECTION TEST" (EPID L-2024-LLA-0086) DATED APRIL 16, 2025

DISTRIBUTION:

PUBLIC
RidsACRS_MailCTR Resource
RidsNrrDorlLpl2-2 Resource
RidsNrrPMWattsBar Resource
RidsRgn2MailCenter Resource
RidsNrrLASLent Resource
RidsNrrDexEeeb Resource
RidsNrrDssStsb Resource
CAdams, NRR
CAshley, NRR
AFoli, NRR

ADAMS Accession No.: ML25084A104 **NRR-058**

OFFICE	NRR/DORL/LPL2-2/PM	NRR/DORL/LPL2-2/LAiT	NRR/DEX/EEEB/BC	NRR/DSS/STSB/BC
NAME	KGreen	CAdams (SL)	WMorton	SMehta
DATE	3/21/2025	3/25/2025	3/10/2025	3/28/2025
OFFICE	OGC – NLO w/edits	NRR/DORL/LPL2-2/BC	NRR/DORL/LPL2-2/PM	
NAME	AGhosh	DWrona	KGreen	
DATE	4/15/2025	4/16/2025	4/16/2025	

OFFICIAL RECORD COPY