



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

January 18, 2022

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, UNIT 1 - ISSUANCE OF AMENDMENT NO. 151 REGARDING REVISION TO TECHNICAL SPECIFICATION 3.7.12 FOR A ONE-TIME EXCEPTION TO PERMIT CONTINUOUS OPENING OF AUXILIARY BUILDING SECONDARY CONTAINMENT ENCLOSURE DURING THE UNIT 2 STEAM GENERATOR REPLACEMENT (EPID L-2021-LLA-0035)

Dear Mr. Barstow:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 151 to Facility Operating License No. NPF-90 for the Watts Bar Nuclear Plant, Unit 1. This amendment is in response to your application dated March 3, 2021, as supplemented by letter dated September 8, 2021.

The amendment revises Watts Bar Nuclear Plant, Unit 1, Technical Specification 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," to allow the auxiliary building secondary containment enclosure boundary to be opened, at specific controlled access points, on a continuous basis during the Watts Bar Nuclear Plant, Unit 2, Cycle 4 refueling outage when the Unit 2 steam generators will be replaced.

A copy of the related safety evaluation is also enclosed. 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 No. 50-390

Enclosures:

1. Amendment No. 151 to NPF-90
2. 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. 151
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 March 3, 2021, as supplemented by letter dated September 8, 2021, 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. 151 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 amendment is effective as of the date of its issuance, and shall be implemented upon commencement of the Unit 2, Cycle 4 refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

David J. 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: January 18, 2022

ATTACHMENT TO AMENDMENT NO. 151

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 page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains a marginal line indicating the area of change.

Remove Page

3.7-27

Insert Page

3.7-27

- (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. 151 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.

3.7 PLANT SYSTEMS

3.7.12 Auxiliary Building Gas Treatment System (ABGTS)

LCO 3.7.12 Two ABGTS trains shall be OPERABLE.

-----NOTE-----

The Auxiliary Building Secondary Containment Enclosure (ABSCE) boundary may be opened intermittently under administrative controls that ensure the ABSCE can be closed consistent with the safety analysis.

As a one-time exception for the Watts Bar Unit 2 Cycle 4 Refueling Outage, scheduled to commence in spring 2022, during which the Unit 2 Replacement Steam Generators (RSGs) will be installed, the breaches of the ABSCE boundary needed to support the Unit 2 RSG project activities (Unit 2 Upper Containment Personnel Air Lock Access, Unit 2 Lower Containment Personnel Air Lock Access, Unit 2 Containment Equipment Hatch, and Auxiliary Building General Supply Fan 737' Elevation Room A12 Access and Backup) may be opened on a continuous basis, under administrative controls that ensure the ABSCE can be closed consistent with the safety analysis.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ABGTS train inoperable.	A.1 Restore ABGTS train to OPERABLE status.	7 days
B. Two ABGTS trains inoperable due to inoperable ABSCE boundary.	B.1 Initiate actions to implement mitigating actions.	Immediately
	<u>AND</u>	
	B.2 Verify mitigating actions ensure main control room occupants do not exceed 10 CFR 50 Appendix A GDC 19 limits.	24 hours
	<u>AND</u>	
	B.3 Restore ABSCE boundary to OPERABLE status.	7 days



UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 151 TO FACILITY OPERATING LICENSE NO. NPF-90
TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 1
DOCKET NO. 50-390

1.0 INTRODUCTION

By letter dated March 3, 2021 (Reference 1), as supplemented by letter dated September 8, 2021 (Reference 2), the Tennessee Valley Authority (TVA, the licensee), submitted a license amendment request (LAR) to the U.S. Nuclear Regulatory Commission (NRC or Commission) for a change to the Watts Bar Nuclear Plant (Watts Bar), Unit 1, technical specifications (TSs). The requested change would modify the existing Note in the Limiting Condition for Operation (LCO) for Watts Bar, Unit 1, TS 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," to allow the auxiliary building secondary containment enclosure (ABSCE) boundary to be opened, at specific controlled access points, on a continuous basis, during the Watts Bar, Unit 2, Cycle 4 refueling outage (U2R4), when the replacement steam generators (RSGs) will be installed.

The supplement dated September 8, 2021, provided additional information that clarified the application, 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 May 18, 2021 (86 FR 26956).

2.0 REGULATORY EVALUATION

2.1 System Description

The systems affected by the proposed request are described below and in Section 3.1 of the LAR.

Primary Containment

The Watts Bar, Unit 1 and Unit 2, containments consist of steel containment vessels (SCVs) and separate shield buildings. The SCVs are low-leakage, freestanding steel structures consisting of a cylindrical wall, a hemispherical dome, and a bottom liner plate encased in concrete. The shield buildings are reinforced concrete structures enclosing an annulus and the SCV. Each unit's primary containment personnel hatch passes from the SCV through the shield building and opens directly to the auxiliary building.

Auxiliary Building Secondary Containment Enclosure

The ABSCE is that portion of the auxiliary building and condensate demineralizer waste evaporator building (and for certain configurations, the annulus and primary containment), which serves to maintain an effective barrier for airborne radioactive contaminants released in the auxiliary building during abnormal events.

Auxiliary Building Gas Treatment System

The ABGTS is a redundant air cleanup system that filters radioactive nuclide releases from the ABSCE during an accident to levels low enough to keep the site boundary dose rates and control room operator doses below the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 100 and 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 19, respectively. The ABGTS draws down the ABSCE to a negative pressure and maintains the negative pressure following abnormal events or a design basis accident to ensure that no contaminated air is released to the environs without first being processed by the ABGTS.

The ABGTS, and the ABSCE that provides the ventilation envelope supporting ABGTS operability, are shared between Watts Bar, Unit 1 and Unit 2; however, there are separate TSs for each unit. TS 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," is similar for both Units 1 and 2, addressing the same ABSCE boundary and ABGTS components, and is applicable in Modes 1, 2, 3, and 4.

2.2 Licensee's Requested Change

As described in Section 2.1 above, the ABGTS and the ABSCE are shared between Units 1 and 2. Because TS 3.7.12 is applicable during Modes 1-4, when Unit 2 is shut down during U2R4 for the RSG project, Unit 1 will still be operating. Therefore, continuous opening of the ABSCE boundary to support the Unit 2 RSG project would require Unit 1 to enter the LCO for Unit 1 TS 3.7.12. Currently, the LCO for TS 3.7.12 allows the ABSCE boundary to be "opened intermittently under administrative controls that ensure the ABSCE can be closed consistent with the safety analysis." Because "intermittent" openings are of short duration, the licensee proposed to add the following information to the Note in the Watts Bar, Unit 1, LCO for TS 3.7.12 to allow continuous openings on a one-time basis:

As a one-time exception for the Watts Bar Unit 2 Cycle 4 Refueling Outage, scheduled to commence in spring 2022, during which the Unit 2 Replacement Steam Generators (RSGs) will be installed, the breaches of the ABSCE boundary needed to support the Unit 2 RSG project activities (Unit 2 Upper Containment Personnel Air Lock Access, Unit 2 Lower Containment Personnel Air Lock Access, Unit 2 Containment Equipment Hatch, and Auxiliary Building General Supply Fan 737' Elevation Room A12 Access and Backup) may be opened on a continuous basis, under administrative controls that ensure the ABSCE can be closed consistent with the safety analysis.

2.3 Applicable Regulations and Guidance

The NRC staff's evaluation is based upon the following regulations and regulatory 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 NRC's regulations.

Pursuant to 10 CFR 50.36, "Technical specifications," TSs for operating reactors are required, in part, to include items in the following five specific categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) LCOs; (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls.

Section 50.36(a)(1) of 10 CFR requires each applicant for a license authorizing operation of a production or utilization facility to include a summary statement of the bases or reasons for proposed TSs, other than those covering administrative controls; however, the bases shall not become part of the TSs.

Section 50.36(b) of 10 CFR requires that each license authorizing reactor operation include TSs derived from the analyses and evaluation included in the safety analysis report and amendments thereto.

Paragraph 50.36(c)(2)(i) of 10 CFR states that LCOs are the lowest functional capability or performance levels of equipment required for safe operation of the facility, and when an LCO of a reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

Section 100.11 of 10 CFR, "Determination of exclusion area, low population zone, and population center distance," for all design basis accidents, except the Fuel Handling Accident, requires that the licensee determine, in part:

- (1) An exclusion area of such size that an individual located at any point on its boundary for two hours immediately following onset of the postulated fission product release would not receive a total radiation dose to the whole body in excess of 25 rem [roentgen equivalent man] or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.
- (2) A low population zone of such size that an individual located at any point on its outer boundary who is exposed to the radioactive cloud resulting from the postulated fission product release (during the entire period of its passage) would not receive a total radiation dose to the whole body in excess of 25 rem or a total radiation dose in excess of 300 rem to the thyroid from iodine exposure.

Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, Criterion 19, "Control room," states, in part, that:

A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

The NRC staff's guidance for the review of TSs is in NUREG-0800, "Standard Review Plan [SRP] 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 (Reference 3). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared Standard Technical Specifications (STS) for each of the LWR nuclear designs. Accordingly, for Westinghouse Electric Company (Westinghouse) plant designs, the NRC staff's review included consideration of whether the proposed changes are consistent with NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Volumes 1 and 2, (Reference 4).

NUREG-0800, Chapter 18, "Human Factors Engineering," Revision 3, (Reference 5) provides the NRC staff with guidance on review of human factors engineering (HFE) practices and guidelines.

NUREG-0711, "Human Factors Engineering Program Review Model," Revision 3, (Reference 6), provides the NRC staff with guidance that addresses, in part, the scope of NRC HFE reviews identified in SRP Chapter 18. This includes, for example, an applicant's identification and treatment of important human actions (HAs) to minimize the likelihood of personnel error, and to help ensure that personnel can detect and recover from any errors that occur.

3.0 TECHNICAL EVALUATION

3.1 Background

The existing Note in LCO 3.7.12 was added by Amendment Nos. 116 and 16 to the Watts Bar, Units 1 and 2, TSs, respectively (Reference 7), in response to an LAR from TVA dated October 20, 2016 (Reference 8), as supplemented by letters dated May 5, 2017 (Reference 9), and July 21, 2017 (Reference 10). The license amendments approved, in pertinent part, the following two changes to TS 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)":

- Addition of a Note to the LCO for both units to allow the ABSCE boundary to be opened intermittently under administrative controls that ensure the ABSCE can be closed consistent with the safety analysis.
- Addition of a new Condition B, "Two ABGTS trains inoperable due to inoperable ABSCE boundary," with Required Actions B.1, B.2, and B.3. Required Action B.3, "Restore ABSCE boundary to OPERABLE status," has a Completion Time of 7 days.

The existing Note in LCO 3.7.12 applies to any breach of the ABSCE that exceeds the total allowable breach area for the ABSCE. The total allowable breach area for operability of the ABSCE boundary is approximately 150 square inches. The total allowable breach area is derived from ABSCE pressure testing and is updated continuously based on the most recent surveillance testing to ensure that the required pressure criteria of -0.25 in. water gauge (WG) can be maintained.

In the 2016 LAR, the licensee initially proposed the possibility of applying the Note to facilitate the RSG project for Watts Bar, Unit 2. However, in a clarification to a response to a request for additional information (RAI), TVA stated that for the RSG project it planned to have three breaches greater than the total allowable breach area for the ABSCE to remain in the open position; therefore, the planned continuous openings would not meet the intent of the Note, which is for intermittent openings in the ABSCE for short duration events only (Reference 10). TVA further stated that it planned to submit a separate LAR to support the RSG project to modify the proposed Note to TS 3.7.12 to allow a one-time exception for the ABSCE breaches to be opened continuously.

The NRC staff's safety evaluation (SE) approving the LCO 3.7.12 Note in Amendment Nos. 116 and 16 for Watts Bar, Units 1 and 2, respectively, included significant considerations (Reference 7). One such consideration was the administrative controls (also called proceduralized controls) that would be implemented in accordance with TVA procedure TI-65, "Breaching the Containment Annulus, ABSCE, or MCRHZ [main control room habitability zone] Pressure Boundaries." In response to a previous RAI (ARCB-RAI-2), TVA enumerated the administrative controls that would be employed for breaches that exceeded the total allowable breach area for the ABSCE (Reference 9). These administrative controls include:

- The breach opening can be closed at all times within 2 minutes of notification from the main control room (MCR). This allows sufficient time to be able to drawdown the ABSCE to -0.25 in. WG within 4 minutes.
- Operations personnel are briefed on the breach location, duration of the administrative controls, personnel location in the field to close the breach, and method of communication.
- Individuals associated with the breach are briefed to ensure they understand their roles and responsibilities.
- Individuals performing the administrative actions are stationed at both the breach location and in the MCR with clear communications established.
- Non-routine ABSCE boundary breaches require that a mock-up be performed prior to the entry to ensure that the breach can be restored within 2 minutes.
- Means to restore the breach, if required, are staged (e.g., blind flanges, foam penetrations, fabric roll-up doors).
- Attachment 5 to TI-65 ensures administrative controls are in place prior to opening the breach and requires a senior reactor operator approval to commence work.

The design basis analysis in the Watts Bar dual-unit Updated Final Safety Analysis Report (UFSAR), Section 15.5.3, "Environmental Consequences of a Postulated Loss of Coolant Accident," assumes that during a loss-of-coolant accident (LOCA), activity leaking to the auxiliary building is directly released to the environment for the first 4 minutes and then through the ABGTS filter system, with an assumed mean hold-up time of 0.3 hours in the auxiliary building before being exhausted (Reference 11).

In arriving at its decision for Amendment Nos. 116 and 16, the NRC staff previously found that, when compared to the 4 minute total allocated drawdown time (2 minutes for closing the breach and 2 minutes for drawdown), the licensee had adequately demonstrated the capability of the ABGTS to establish the auxiliary building to the required negative pressure when the ABGTS boundary is opened under administrative controls allowed by the proposed Note (i.e., existing Note), and that the Note was consistent with the design basis described in the UFSAR.

3.2 One-Time Exception to the Existing Note in the LCO 3.7.12

As described in the LAR being evaluated by this SE, the licensee proposed to modify the existing Note in Watts Bar, Unit 1, LCO 3.7.12 to allow a one-time exception for the ABSCE breaches to be opened continuously to support the Watts Bar, Unit 2, RSG project. Breaches of the shared ABSCE boundary are controlled in accordance with Watts Bar, Unit 1, TS 3.7.12. During the Watts Bar, Unit 2, RSG project, Unit 1 will be operating (i.e., in Modes 1, 2, 3, or 4). Watts Bar, Unit 2, will be in Modes 5 or 6 (Cold Shutdown or Refueling, respectively); therefore, continuous opening of the ABSCE boundary to support the Unit 2 RSG project would require Unit 1 to enter the LCO for Unit 1 TS 3.7.12.

As described in Section 3.2.2, "Unit 2 RSG Outage Activities" of the LAR, the breaches of the ABSCE boundary that are planned to be opened on a continuous basis during the Watts Bar, Unit 2, RSG project are as follows:

- Unit 2 Upper Containment Personnel Air Lock Access (Plant Door A157), which provides upper containment access for workers and for equipment.
- Unit 2 Lower Containment Personnel Air Lock Access (Plant Door A77), which provides lower containment access for workers and for equipment transit.
- Unit 2 Containment Equipment Hatch (Room 757.0-A15), which provides primary containment access for workers and for equipment. During the RSG outage, this hatch will be secured as needed by a temporary ABSCE door (WBN-0-DOOR-410-R003) capable of being closed within 2 minutes.
- Auxiliary Building General Supply Fan 737' Elevation Room A12 Access and Backup (Plant Doors A132/A133), which will provide auxiliary building access from the outside for personnel and for equipment during the RSG outage.

In LAR Section 3.2.1, "Operability to Support Unit 1 Operation during the RSG Outage," the licensee stated the same proceduralized controls that were previously reviewed by the NRC for Amendment Nos. 116 and 16 (listed in Section 3.1 above) will remain in effect for continuous openings of the ABSCE to support the Watts Bar, Unit 2, RSG project.

The NRC staff reviewed the activities and statements made in LAR Section 3.2.2, as described below.

- The licensee stated that during a typical outage, the Unit 2 containment is considered part of the ABSCE when the Unit 2 Upper and Lower Containment Personnel Air Locks and the Unit 2 Equipment Hatch are open and, therefore, these openings are not considered breaches of the ABSCE.

In SCPB RAI 1b, the NRC staff requested confirmation that ABGTS drawdown tests include the containment volume as part of the ABSCE boundary to support the statement that Unit 2 containment is considered part of the ABSCE of Unit 1 (Reference 12).

In its response, the licensee confirmed “that ABGTS drawdown testing included the [Watts Bar,] Unit 2 containment volume as part of the ABSCE boundary” (Reference 2). Based on this confirmation, the NRC staff finds that the ABGTS has the capability to draw down the ABSCE (i.e., reduce the pressure to a negative pressure) when its boundary includes the Unit 2 containment during the RSG project.

- The licensee stated that, during the RSG outage, temporary openings in the Unit 2 shield building concrete dome and steel containment vessel will be created in order to remove the existing SGs and install the RSGs. These temporary openings cannot be closed within the required time frame to remain consistent with the safety analysis. Thus, once these openings are created, the ABSCE boundary will be moved to exclude the Unit 2 containment. Therefore, the two air locks and the equipment hatch will be considered breaches of the ABSCE when the temporary openings in the shield building dome are created.

In SCPB RAI 1a, the NRC staff requested that the licensee clarify if the containment personnel air locks and equipment hatch openings are administratively controlled throughout the period when the airlocks and hatch are open or only during the period when the temporary openings through the shield building concrete dome and steel containment vessel exist (Reference 12).

In its response, the licensee stated that “Plant Doors A157 and A77 and the containment equipment hatch are breached shortly after [Watts Bar,] Unit 2 enters Mode 5, but do not create an ABSCE opening until they exceed the breach allowable margin when cutting the holes in the Shield Building Dome” (Reference 2). Based upon this clarification, the NRC staff understands that the breach margin referenced in this context for the containment access doors is that of the opening in the concrete dome and steel dome.

- The licensee stated that during the RSG outage, the containment equipment hatch will be secured as needed by a temporary ABSCE door (WBN-0-DOOR-410-R003) capable of being closed within 2 minutes.

In RAI SCPB 2, the NRC staff requested information (including test acceptance criteria) regarding the temporary door and its leak tightness to ensure that its impact, if any, on the capability of ABGTS to draw down ABSCE to the required negative pressure within the acceptable time is minimal and acceptable (Reference 12).

In its response, the licensee stated that preliminary testing of the temporary fabric door will be performed during the Watts Bar, Unit 2, Cycle 4a mid-cycle outage to provide confidence that leakage through the door and associated door hardware and seals is minimal.

Additional testing of the ABSCE boundary will be performed with the fabric door installed to secure the equipment hatch, prior to creating the temporary openings in the Unit 2 containment dome. This test will confirm that the total ABSCE leakage with the fabric door as part of the boundary is less than allowed by the Watts Bar, Unit 1 and 2, SR 3.7.12.4.

The licensee also stated that, “[t]he acceptance criteria for the temporary fabric door, in order to demonstrate that the ABSCE can be drawn down to the required negative pressure within the acceptable time, are the same as for any other breach opening.” The licensee further indicated, as noted in Reference 7, “The ABSCE boundary must be able to be restored within [4] minutes (including the time for restoration of the ABSCE boundary and drawdown) in accordance with UFSAR Section 15.5.3.” Additionally, the licensee stated, that “as noted in References 1 and 2, the breach opening must be demonstrated it can be closed within [2] minutes of notification from the MCR. This allows sufficient time to be able to drawdown the ABSCE to -0.25 [in. WG] within [4] minutes consistent with the [Watts Bar] UFSAR.”

The staff reviewed the response and concludes that the actions proposed by TVA (i.e., preliminary leakage testing of the fabric door, final leakage testing of the ABSCE boundary with fabric door, and demonstration that the fabric door can be closed in 2 minutes) will ensure that the impact, if any, of the fabric door on the leak tightness of the ABSCE is minimal.

3.3 Evaluation of Proposed One-Time Exception to the Existing Note in the LCO 3.7.12

The staff compared the existing Note in the TS 3.7.12 LCO with the proposed one-time exception to the existing Note, including the proposed administrative controls to close the openings when necessary.

The existing Note is for short duration events such as normal refueling outages, when one unit is operating and the other is in refueling, whereas the one-time exception is for specific outage U2R4, which is a longer period when RSG work is taking place for Unit 2 while Unit 1 is operating. As noted in References 9 and 10, the existing Note can also be used during fire damper testing and inspections, and damper strokes during normal operation, whereas the proposed one-time exception to the Note is for the Unit 2 RSG outage, U2R4, when the specific identified breaches will remain open on a continuous basis.

The number of ABSCE openings required to be under administrative control with the existing Note are less than during the proposed one-time exception because the containment openings to the normal outage unit need not be under administrative control as its containment is considered to be part of the ABSCE boundary for the operating unit. During the Unit 2 RSG outage, however, all the containment access doors that are opened to facilitate the Unit 2 RSG activities fall under the purview of administrative controls once containment dome openings are created.

During the application of the one-time exception, a temporary fabric door will be installed to secure the Unit 2 containment equipment hatch as needed. The fabric door will undergo leakage tests in advance to ensure that the leak tightness of the ABSCE boundary is minimal (Reference 2).

In both cases, the ABCSE boundary openings that are required to be closed are under the same administrative controls as stated in Section 3.1 above. All the doors that would be opened on a continuous basis are part of the ABSCE boundary drawdown leakage tests with the doors in closed position. During the application for the existing Note, the licensee confirmed, in response to NRC SPBP-RAI 1, that the ABSCE drawdown tests are in accordance with the surveillance instructions for Surveillance Requirement 3.7.12.4 to test the leak tightness of the ABSCE by the ABGTS (Reference 9). However, as part of this one-time exception request to the current Note, the licensee is proposing the use of a temporary fabric door to close the containment equipment hatch. The NRC staff reviewed the leakage testing, i.e., a preliminary test followed by an ABSCE boundary test, proposed for the temporary fabric door, as described above in Section 3.2. The preliminary test will provide confidence that leakage through the door and associated hardware and seals is minimal. The ABSCE boundary leakage test, which will be performed with the fabric door installed to secure the equipment hatch, will confirm that the total ABSCE leakage with the fabric door as part of the ABSCE boundary is within that allowed by SR 3.7.12.4 for Units 1 and 2. Because the testing would be conducted to demonstrate that the ABSCE boundary leakage will be below the TS limits, the NRC staff finds that the use of the temporary fabric door and testing thereof is acceptable.

The dose consequences of the ABSCE breaches under administrative controls, whether they are under the existing Note or under the proposed one-time exception are similar. The proposed change does not impact the initiation and operation of the ABGTS filter trains nor the surveillance requirements for Watts Bar, Unit 1, TS 3.7.12. The consequences were evaluated in the NRC staff's SE for approval of the existing note (Reference 7) and reproduced here as modified to the extent applicable to the proposed one-time exception to the Note.

When compared to the 4 minute total allocated drawdown time (2 minutes for closing the breach and 2 minutes for drawdown), the NRC staff concludes that the licensee has adequately demonstrated the capability of the ABGTS to establish the ABSCE to the required negative pressure, when the ABGTS boundary is opened under procedural controls allowed by the proposed one-time exception.

Section 50.36(b) of 10 CFR requires the TSs be derived from the analyses and evaluation included in the safety analysis report. Section 15.5.3 of the Watts Bar UFSAR contains the analysis of the environmental consequences of a postulated LOCA (Reference 11). This analysis remains unchanged from when the NRC approved the existing LCO Note in Amendment Nos. 116 and 16. It assumes that activity leaking to the ABSCE is directly released to the environment for the first 4 minutes, after which it is held up for 0.3 hours and then released through the ABGTS system filter. The design basis in UFSAR Section 15.5.3 includes the time for the ABGTS to drawdown the auxiliary building to a pressure of -0.25 in. WG.

The NRC staff has reviewed the proposed change to add a one-time exception to the existing Note to TS LCO 3.7.12 and has determined that it is consistent with the NRC-approved design basis as reflected in Watts Bar, UFSAR Section 15.5.3. Because the proposed change is consistent with the NRC-approved design basis, there is reasonable assurance that in the event of a LOCA, the radioactive release will be mitigated as assumed in the licensing basis and, therefore, the regulatory limits stated in 10 CFR 100.11 and GDC 19 will be met. The proposed

one-time exception to the Note is consistent with similar notes for ventilation system boundaries in NUREG-1431, with additional clarity provided regarding compliance with the safety analysis, (i.e., design basis LOCA), during the application of the Note. Also, the licensee has demonstrated that adequate procedures exist at Watts Bar to comply with the proposed one-time exception to the Note.

Based on the above considerations, the NRC staff finds that the proposed change to add a one-time exception to the existing Note in TS LCO 3.7.12 does not affect the current Watts Bar, Unit 1, radiological consequence analyses. Therefore, the NRC staff concludes that this change is acceptable with respect to the radiological consequences of design basis accidents and consequently, the requirements of 10 CFR 50.36 will continue to be met. Conforming TS Bases changes will be controlled by the licensee in accordance with the Technical Specifications Bases Control Program in TS 5.6.

3.4 Human Factors

3.4.1 Description of Administrative Controls

In the LAR, the licensee stated that for the continuous openings of the ABSCE boundary to support the Unit 2 RSG project, the same proceduralized controls reviewed by the NRC staff in Reference 7 will remain in effect. The sections below describe these proceduralized controls.

Personnel Actions

In the supplement dated May 5, 2017 (Reference 9), and as listed above in SE Section 3.1, TVA described administrative controls from TVA procedure TI-65 that the dedicated individuals must perform for ABSCE breaches when the total allowable breach area is exceeded, including:

- closing the breach opening within 2 minutes of notification from the MCR;
- stationing the individuals performing the administrative actions at both the breach location and in the MCR with clear communications established;
- staging the means to restore the breach, if required (e.g., blind flanges, foam penetrations, fabric roll-up doors); and
- performing mock-up for non-routine ABSCE boundary breaches prior to the entry to ensure that the breach can be restored within 2 minutes.

Additionally, Attachment 5 to TI-65 ensures that the administrative controls are in place prior to opening the breach and requires a senior reactor operator approval to commence work.

In Reference 1, TVA stated that these administrative controls that ensure the individual will take specific actions remain unchanged from the current licensing basis.

Upon notification from the MCR, the dedicated individual must perform the administrative action (i.e., TI-65) to close the temporary breach within 2 minutes. The amount of time (i.e., 2 minutes) the dedicated individual is allotted to take the administrative action also remains unchanged.

The breaches, described in SE Section 3.2 above, will have trained dedicated personnel posted prior to surpassing the allowable breach margin to ensure that there is adequate time to complete the action.

TVA will stage the breaches with a temporary method to close the breach (e.g., blind flanges, foam penetrations, fabric roll-up doors). TVA stated there is confidence that this action can be completed within 2 minutes and as required under existing requirements because of similar continuous breach experience with other TVA nuclear projects. Therefore, TVA did not conduct a new safety analysis. Moreover, TVA is not proposing additional changes (i.e., physical changes to plant systems, structures, or components) that would affect the actions of the operator or the dedicated individual that were considered in previous analyses. Additionally, TVA confirmed in the RAI response that each of the designated individuals (one person at each breach for a total of four, at any given time) stationed at their respective breach will not have incidental duties that could delay them from performing the administrative action to close the breach within the 2 minutes of notification from the MCR (Reference 2).

Treatment of Important Human Actions

In its SE for Amendment Nos. 116 and 16, the NRC staff discussed the assessment that confirmed TVA's conclusion that (1) the ABSCE boundary could be inoperable indefinitely without exceeding 10 CFR Part 100 limits, and that (2) the ABSCE boundary can only be inoperable for up to 6 hours following a LOCA without exceeding the limits of 10 CFR Part 50, Appendix A, GDC 19. Also, the NRC staff agreed with the licensee's conclusion that 6 hours is more than enough time for operators to take appropriate actions to ensure GDC 19 limits will not be exceeded (e.g., requiring MCR personnel to don self-contained breathing apparatuses) and concluded that there was reasonable assurance that the 10 CFR Part 100 and 10 CFR Part 50, Appendix A, GDC 19 limits would be met.

Procedures

TVA stated that the same administrative controls (i.e., TI-65) used to implement the existing Note in Watts Bar, Unit 1, TS LCO 3.7.12 will be used to ensure that the breaches will be properly controlled. TVA further stated in the subject LAR that therefore, the ability to ensure the ABSCE can be closed consistent with the safety analysis during the RSG project is assured.

In accordance with TVA procedure TI-65, a breach tracking permit is used to control any planned breach entries of the ABSCE boundary. Additionally, ABSCE boundary breaches are logged and tracked using a breach permit tracking log. This log includes the breach open area, the start and stop times for the breach, and the breach tracking permit number.

Training

In addition to the actions listed above in "Personnel Actions," TVA identified the following administrative controls from TVA procedure TI-65 related to training (Reference 9):

- Operations personnel are briefed on the breach location, duration of the administrative controls, personnel location in the field to close the breach, and method of communication.
- Individuals associated with the breach are briefed to ensure they understand their roles and responsibilities.

3.4.2 Staff Discussion of Administrative Controls

TVA referenced the administrative controls and procedures previously approved by the NRC staff for Amendment Nos. 116 and 16 for Watts Bar, Units 1 and 2, respectively, for the

intermittent opening of breaches that exceed the total allowable breach area. The proposed administrative controls for the continuous openings during U2R4 to ensure the ABSCE can be closed consistent with the safety analysis remain unchanged in this LAR.

TVA also referenced the process of staging, training, administrative controls, and procedures necessary to complete the personnel actions to maintain the boundary. The NRC staff concludes that the information provided in Section 3.2 of the LAR illustrates that the proceduralized controls will not adversely impact the ability of the ABGTS to function and perform, as needed, to maintain offsite and control room operator doses within acceptable limits.

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 July 27, 2021. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 in the *Federal Register* on May 18, 2021 (86 FR 26956), and there has been no public comment on such finding. Accordingly, the amendment meets 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 amendment.

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.

7.0 REFERENCES

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 4. NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Revision 5, Volumes 1 and 2, September 2021 (ADAMS Accession Nos. ML21259A155 and ML21259A159).
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 10. Shea, J. W., TVA, letter to U.S. NRC, "Revised Response to Request for Additional Information Related to License Amendment Request to Revise Technical Specification 3.7.12, Auxiliary Building Gas Treatment System (ABGTS), for Watts Bar Nuclear Plant, Units 1 and 2 (CAC Nos. MF8526 and MF8527)," July 21, 2017 (ADAMS Accession No. ML17205A322).
 11. Watts Bar Nuclear Plant, Dual Unit Updated Final Safety Analysis Report, Amendment 3, Chapter 15, "Accident Analysis," October 29, 2020 (ADAMS Accession No. ML20323A316).

12. Wentzel, M., U.S. NRC, email to Wells, R. D., TVA, "Request for Additional Information Regarding TVA's Request to Revise the Watts Bar Nuclear Plant, Unit 1 Technical Specifications Related to Continuous Opening of the Auxiliary Building Secondary Containment Enclosure Boundary (EPID L-2021-LLA-0035)," August 9, 2021 (ADAMS Accession No. ML21221A260).

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Date: January 18, 2022

SUBJECT: WATTS BAR NUCLEAR PLANT, UNIT 1 - ISSUANCE OF AMENDMENT NO. 151 REGARDING REVISION TO TECHNICAL SPECIFICATION 3.7.12 FOR A ONE-TIME EXCEPTION TO PERMIT CONTINUOUS OPENING OF AUXILIARY BUILDING SECONDARY CONTAINMENT ENCLOSURE DURING THE UNIT 2 STEAM GENERATOR REPLACEMENT (EPID L-2021-LLA-0035) DATED JANUARY 18, 2022

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