



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

October 2, 2017

Mr. Joseph W. Shea, Vice President,  
Nuclear Regulatory Affairs  
and Support Services  
Tennessee Valley Authority  
1101 Market Street, LP 3R-C  
Chattanooga, Tennessee 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3; WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS TO CHANGE TECHNICAL SPECIFICATIONS TO ADOPT TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER-522, "REVISE VENTILATION SYSTEM SURVEILLANCE REQUIREMENTS TO OPERATE FOR 10 HOURS PER MONTH" (CAC NOS. MF9562, MF9563, MF9564, MF9565, AND MF9566)

Dear Mr. Shea:

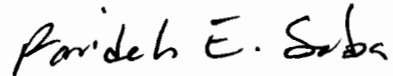
The Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed amendments:

1. Amendment Nos. 300, 324, and 284 to Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively.
2. Amendment Nos. 115 and 15 to Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant, Units 1 and 2, respectively.

These amendments are in response to your application dated April 5, 2017. The amendments revise technical specification surveillance requirements that currently require operating ventilation systems with charcoal filters for a 10-hour period every 31 days. The surveillance requirements are revised to require operation of the systems for 15 continuous minutes every 31 days. The amendments are consistent with NRC-approved Technical Specifications Task Force (TSTF) Traveler TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," as published in the *Federal Register* on September 20, 2012 (77 FR 58421).

Copies of the related Safety Evaluations are also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,



Farideh E. Saba, Senior Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260, 50-296  
50-390, and 50-391

Enclosures:

1. Amendment No. 300 to DPR-33
2. Amendment No. 324 to DPR-52
3. Amendment No. 284 to DPR-68
4. Amendment No. 115 to NPF-90
5. Amendment No. 15 to NPF-96
6. Safety Evaluation for Browns Ferry
7. Safety Evaluation for Watts Bar

cc w/enclosures: Distribution via Listserv



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 300  
Renewed License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 5, 2017, 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.

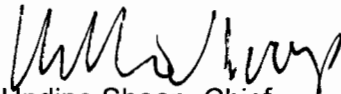
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 300, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility Operating  
License and Technical Specification

Date of Issuance: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 300

BROWNS FERRY NUCLEAR PLANT, UNIT 1

RENEWED FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Replace page 3 of Renewed Facility Operating License No. DPR-33 with the attached revised page 3.

Replace the following pages of the Appendix A Technical Specifications with the attached revised page. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.6-54  
3.7-11

INSERT

3.6-54  
3.7-11

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;
  - (5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 300, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 234 to Facility Operating License DPR-33, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 234. For SRs that existed prior to Amendment 234, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 234.

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for $\geq 15$ continuous minutes with heaters operating.	31 days
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.6.4.3.4	Verify the SGT decay heat discharge dampers are in the correct position.	12 months

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for $\geq 15$ continuous minutes with the heaters operating.	31 days
SR 3.7.3.2	Perform required CREV filter testing in accordance with the VFTP.	In accordance with the VFTP
SR 3.7.3.3	Verify each CREV subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program





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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 324  
Renewed License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 5, 2017, 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.

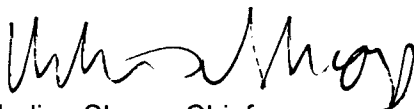
3. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 324, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility Operating  
License and Technical Specification

Date of Issuance: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 324

BROWNS FERRY NUCLEAR PLANT, UNIT 2

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Replace page 3 of Renewed Facility Operating License No. DPR-52 with the attached revised page 3.

Replace the following pages of the Appendix A Technical Specifications with the attached revised page. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.6-54  
3.7-12

INSERT

3.6-54  
3.7-12

sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;

- (4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 324, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 253 to Facility Operating License DPR-52, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 253. For SRs that existed prior to Amendment 253, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 253.

- (3) The licensee is authorized to relocate certain requirements included in Appendix A and the former Appendix B to licensee-controlled documents. Implementation of this amendment shall include the relocation of these requirements to the appropriate documents, as described in the licensee's

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for $\geq 15$ continuous minutes with heaters operating.	31 days
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.6.4.3.4	Verify the SGT decay heat discharge dampers are in the correct position.	12 months

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for $\geq 15$ continuous minutes with the heaters operating.	31 days
SR 3.7.3.2	Perform required CREV filter testing in accordance with the VFTP.	In accordance with the VFTP
SR 3.7.3.3	Verify each CREV subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program



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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 284  
Renewed License No. DPR-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 5, 2017, 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 Renewed Facility Operating License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 284, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility Operating  
License and Technical Specification

Date of Issuance: October 2, 2017



ATTACHMENT TO LICENSE AMENDMENT NO. 284

BROWNS FERRY NUCLEAR PLANT, UNIT 3

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Replace page 3 of Renewed Facility Operating License No. DPR-68 with the attached revised page 3.

Replace the following pages of the Appendix A Technical Specifications with the attached revised page. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.6-54  
3.7-12

INSERT

3.6-54  
3.7-12

- (3) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) 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 or equipment and instrument calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 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 renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; 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

The licensee is authorized to operate the facility at steady state reactor core power levels not in excess of 3952 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 284, are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

For Surveillance Requirements (SRs) that are new in Amendment 212 to Facility Operating License DPR-68, the first performance is due at the end of the first surveillance interval that begins at implementation of the Amendment 212. For SRs that existed prior to Amendment 212, including SRs with modified acceptance criteria and SRs whose frequency of performance is being extended, the first performance is due at the end of the first surveillance interval that begins on the date the surveillance was last performed prior to implementation of Amendment 212.

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for $\geq 15$ continuous minutes with heaters operating.	31 days
SR 3.6.4.3.2	Perform required SGT filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.6.4.3.3	Verify each SGT subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.6.4.3.4	Verify the SGT decay heat discharge dampers are in the correct position.	12 months

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for $\geq 15$ continuous minutes with the heaters operating.	31 days
SR 3.7.3.2	Perform required CREV filter testing in accordance with the VFTP.	In accordance with the VFTP
SR 3.7.3.3	Verify each CREV subsystem actuates on an actual or simulated initiation signal.	24 months
SR 3.7.3.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program



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TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-390

WATTS BAR NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 115  
License No. NPF-90

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 5, 2017, 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

The Technical Specifications contained in Appendix A as revised through Amendment No. 115 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. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating  
License and Technical Specification

Date of Issuance: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 115

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.

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

REMOVE

3.6-24  
3.7-28

INSERT

3.6-24  
3.7-28

- (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. 115 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.



3.6 CONTAINMENT SYSTEMS

3.6.9 Emergency Gas Treatment System (EGTS)

LCO 3.6.9 Two EGTS trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EGTS train inoperable.	A.1 Restore EGTS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.6.9.1 Operate each EGTS train for $\geq 15$ continuous minutes with heaters operating.	31 days
SR 3.6.9.2 Perform required EGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for $\geq 15$ continuous minutes with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate $\geq 9300$ and $\leq 9900$ cfm.	18 months on a STAGGERED TEST BASIS



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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DOCKET NO. 50-391

WATTS BAR NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 15  
License No. NPF-96

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated April 5, 2017, 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.

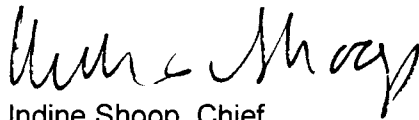
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-96 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 15 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. The license amendment is effective as of its date of issuance and shall be implemented within 30 days of the date of issuance

FOR THE NUCLEAR REGULATORY COMMISSION



Undine Shoop, Chief  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Facility Operating  
License and Technical Specification

Date of Issuance: October 2, 2017

ATTACHMENT TO LICENSE AMENDMENT NO. 15

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.

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

REMOVE

3.6-22  
3.7-27

INSERT

3.6-22  
3.7-27

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 3411 megawatts thermal.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 15 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) PAD4TCD may be used to establish core operating limits for Cycles 1 and 2 only. PAD4TCD may not be used to establish core operating limits for subsequent reload cycles.

(5) By December 31, 2017, 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 by 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:

3.6 CONTAINMENT SYSTEMS

3.6.9 Emergency Gas Treatment System (EGTS)

LCO 3.6.9 Two EGTS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One EGTS train inoperable.	A.1 Restore EGTS train to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	<u>AND</u> B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Operate each EGTS train for $\geq 15$ continuous minutes with heaters operating.	31 days
SR 3.6.9.2	Perform required EGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Operate each ABGTS train for $\geq 15$ continuous minutes with the heaters operating.	31 days
SR 3.7.12.2	Perform required ABGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.12.3	Verify each ABGTS train actuates on an actual or simulated actuation signal.	18 months
SR 3.7.12.4	Verify one ABGTS train can maintain a pressure between -0.25 inches and -0.5 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate $\geq 9300$ cfm and $\leq 9900$ cfm.	18 months on a STAGGERED TEST BASIS





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 300

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-33,

AMENDMENT NO. 324 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-52, AND

AMENDMENT NO. 284 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

By letter dated April 5, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17096A620), Tennessee Valley Authority (TVA, the licensee), submitted a license amendment request regarding the Browns Ferry Nuclear Plant (Browns Ferry) Units 1, 2, and 3. Specifically, the licensee requested to adopt Nuclear Regulatory Commission (NRC, the Commission)-approved Technical Specification Task Force (TSTF) Standard Technical Specifications (STSs) Change Traveler TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month" (ADAMS Accession No. ML100890316), dated March 30, 2010.

The proposed amendments would revise Technical Specification (TS) Surveillance Requirements (SRs) for the standby gas treatment (SGT) system (TS 3.6.4.3) and control room emergency ventilation (CREV) system (TS 3.7.3) that currently require operating the ventilation system for at least 10 continuous hours with the heaters operating on a frequency of 31 days. Specifically, the SRs would be changed to require at least 15 continuous minutes of ventilation system operation with the heaters operating every 31 days. The licensee also included TS Bases changes that summarize and clarify the purpose of the TSs in accordance with TSTF-522.

The licensee stated that the license amendment request is consistent with NRC-approved TSTF-522. The availability of this TS improvement was announced in the *Federal Register* (FR) on September 20, 2012 (77 FR 58421), as part of the consolidated line item improvement process.

The NRC issued a proposed finding that the amendments involve no significant hazards consideration, published in the *Federal Register* on June 6, 2017 (82 FR 26139). The NRC has not received any public comments on this finding.

## 2.0 REGULATORY EVALUATION

The NRC's regulatory requirements related to the content of the TSs are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36. The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the LCOs will be met.

One of the reasons air filtration and adsorption systems are required at nuclear power plants is to lower the concentration of airborne radioactive material that may be released from the site to the environment due to a design-basis event. Lowering the concentration of airborne radioactive materials can mitigate doses to plant operators and members of the public in the event of a design-basis event. A typical system consists of ventilation ductwork, fans, dampers, valves, instrumentation, prefilters or demisters, high efficiency particulate air (HEPA) filters, heaters, and activated charcoal adsorbers. These systems are tested by operating the systems and monitoring the response of the overall system as well as individual components. Laboratory tests of charcoal adsorbers are also performed to ensure the charcoal adsorbs an acceptable amount of radioactive gasses.

The regulatory requirements for design and testing of these systems are contained in 10 CFR 50.67, "Accident Source Term," and Part 100, "Reactor Site Criteria," as well as Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants": General Design Criterion (GDC) 19, "Control Room"; GDC 41, "Containment Atmosphere Cleanup"; GDC 42, "Inspection of Containment Atmosphere Cleanup System"; GDC 43, "Testing of Containment Atmosphere Cleanup System"; and GDC 61, "Fuel Storage and Handling and Radioactivity Control." The licensee stated in its license amendment request dated April 5, 2017, that the model safety evaluation discusses the applicable regulatory requirements and guidance, including applicable 10 CFR Part 50, Appendix A, GDC. However, the Browns Ferry units were not licensed to the 10 CFR Part 50, Appendix A, GDC. The Browns Ferry Updated Final Safety Analysis Report (UFSAR), Appendix A, "Conformance to AEC [Atomic Energy Commission] Proposed General Design Criteria," provides an assessment of the design of Browns Ferry against the draft GDC published in November 1965 (Units 1 and 2) and July 1967 (Unit 3). While there is not a direct correlation between the current and draft GDC published in November 1965 (Units 1 and 2) and July 1967 (Unit 3), the licensee has determined that the plant-specific requirements are sufficiently similar to the Appendix A GDC as related to the proposed changes.

Regulatory Guide (RG) 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post-Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants" (ADAMS Accession No. ML003740139), was published in March 1978 to provide guidance and criteria acceptable to the NRC staff for licensees to implement the regulations in 10 CFR related to air filtration and adsorption systems.

Regulatory Position 4, "Maintenance," item "d" of RG 1.52, Revision 2, stated that "Each ESF [engineered safety feature] atmosphere cleanup train should be operated at least 10 hours per month, with the heaters on (if so equipped), in order to reduce the buildup of moisture on the adsorbers and HEPA filters." The purpose of this position was to minimize the moisture content

in the system and, thereby, enhance efficiency if the system were called upon to perform its design-basis function.

The NRC's guidance for the format and content of the licensees TSs can be found in NUREG-1433 Revision 4, "Standard Technical Specifications General Electric BWR [Boiling-Water Reactor]/4 Plants." The current NUREG-1433, Revision 4 (April 2012) (ADAMS Accession No. ML12104A193), SR Bases 3.6.4.3.1 explains that operation of heaters for 10 hours every 31 days would eliminate moisture on the adsorbers and HEPA filters. In addition, the current STS SR Bases 3.7.4.1 (same as SR 3.7.3.1 for Browns Ferry) describes that monthly operation of heaters for 10 hours dries out any moisture accumulated in the charcoal from humidity in the ambient air. Browns Ferry TS SRs 3.6.4.3.1 and 3.7.3.1 currently require operating the heaters in the respective ventilation and filtering systems for at least 10 continuous hours every 31 days.

Subsequently, the NRC staff was informed that 10 continuous hours of system operation would dry out the charcoal adsorber for a brief period of time but, following heater de-energization, the level of moisture accumulation in adsorbers would rapidly return to the pre-test level. The NRC staff found this information persuasive. The NRC issued on June 3, 1999, Generic Letter (GL) 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal" (ADAMS Accession No. ML082350935 and errata sheet under ADAMS Accession No. ML031110094). GL 99-02 requested licensees to confirm that their charcoal testing protocols accurately reflected the adsorber gaseous activity capture capability. GL 99-02 also requested licensees to account for the effects of moisture accumulation in adsorbers.

The NRC updated RG 1.52, Revision 3 (June 2001), "Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants" (ADAMS Accession No. ML011710176), to include the new information. RG 1.52, Revision 3, Regulatory Position 6, "In-Place Testing Criteria," Item 6.1 states, "Each ESF atmosphere cleanup train should be operated continuously for at least 15 minutes each month, with the heaters on (if so equipped), to justify the operability of the system and all its components." The NRC has since issued RG 1.52, Revision 4 (September 2012) (ADAMS Accession No. ML12159A013); however, Regulatory Position 6.1 remains substantively unchanged from Revision 3.

As stated earlier, one of the reasons for the previous 10-hour requirement for ventilation system operation with heaters operating was to minimize the effects of moisture on the adsorbers' ability to capture gaseous activity. However, these effects are already accounted for in the licensee's ventilation filter test program by performing testing at a high relative humidity in accordance with ASTM D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon." The Browns Ferry TS 5.5.7, "Ventilation Filter Testing Program (VFTP)," requires testing of charcoal adsorbers in a manner to account for the effects of moisture on the adsorbers' ability to capture gaseous activity.

### 3.0 TECHNICAL EVALUATION

Current testing requirements in SR 3.6.4.3.1 and SR 3.7.3.1 for the air filtration and adsorption systems at Browns Ferry state that every 31 days the systems should be operated for at least 10 continuous hours with the heaters operating. These requirements are based on the NRC guidance for testing air filtration and adsorption systems that, as stated above, has been superseded. The latest NRC guidance states that at least 15 continuous minutes of ventilation

system operation with heaters operating every 31 days is acceptable to justify operability of the system and its components.

The licensee proposed revising SR 3.6.4.3.1 and SR 3.7.3.1 that currently require operating the ventilation system every 31 days with the heaters operating for at least 10 continuous hours. These SRs would be changed to require at least 15 continuous minutes of ventilation system operation with the heaters operating.

The NRC staff evaluated the licensee's proposed changes against the applicable regulatory guidance in RG 1.52, Revision 4, guidance in the STSs as modified by TSTF-522, and the regulatory requirements of 10 CFR 50.36. The proposed change would require at least 15 minutes of system operation with heaters operating. Therefore, the NRC staff found that the proposed changes are consistent with guidance in RG 1.52, Revision 4.

The NRC staff evaluated the licensee's proposed changes against the applicable regulatory guidance in the STSs, as modified by TSTF-522. The proposed changes adopt the TS format and content, to the extent practicable, contained in the changes made to NUREG-1433 by TSTF-522. Therefore, the NRC staff found that the proposed changes are consistent with guidance in the STSs, as modified by TSTF-522.

The NRC staff compared the proposed changes to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36. The existing SRs provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. The proposed changes reduce the amount of required system operational time from 10 hours to 15 minutes. The 10-hour operational requirement for heaters was based on using the SR to eliminate moisture in the adsorbers and, thus, ensure that the adsorbers would capture gaseous activity.

As discussed in Section 2.0 of this safety evaluation, the effects of moisture on the adsorbers' ability to capture gaseous activity are now accounted for in the licensee's Ventilation Filter Testing Program by performing testing at a high relative humidity. Since the SR's are no longer relied upon to ensure that the effects of moisture on the adsorbers' ability to capture gaseous activity are accounted for, the 10-hour heater operational requirement is unnecessary. The NRC staff found that reducing the required minimum system operation time to 15 minutes, consistent with RG 1.52, Revision 4, in conjunction with the ventilation filter testing program, is sufficient to justify operability of the system and all its components. The NRC staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36, because they provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. Therefore, the NRC staff concludes that the proposed changes are acceptable.

The regulation at 10 CFR 50.36 states: "A summary statement of the bases or reasons for such specifications . . . shall also be included in the application, but shall not become part of the technical specifications." The licensee may make changes to the TS Bases without prior NRC staff review and approval in accordance with the TS 5.5.10 "Technical Specifications (TS) Bases Control Program." Accordingly, along with the proposed TS changes, the licensee also submitted TS Bases changes corresponding to the proposed TS changes. The NRC staff determined that these TS Bases changes are consistent with the proposed TS changes and provide the purpose for each requirement in the specification consistent with the Commission's Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors, dated July 2, 1993 (58 FR 39132).

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendments on September 14, 2017. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change SRs. 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 has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on June 6, 2017 (82 FR 26139). 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Larry L. Wheeler

Date: October 2, 2017



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 115

TO FACILITY OPERATING LICENSE NO. NPF-90 AND

AMENDMENT NO. 15 TO FACILITY OPERATING LICENSE NO. NPF-96.

TENNESSEE VALLEY AUTHORITY

WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-390 AND 50-391

1.0 INTRODUCTION

By letter dated April 5, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML17096A620), Tennessee Valley Authority (TVA, the licensee), submitted a license amendment request (LAR) regarding the Watts Bar Nuclear Plant (Watts Bar), Units 1 and 2. Specifically, the licensee requested to adopt Nuclear Regulatory Commission (NRC, the Commission)-approved Technical Specification Task Force (TSTF) Standard Technical Specifications (STSs) Change Traveler TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," dated March 30, 2010 (ADAMS Accession No. ML100890316).

The proposed amendments would revise Technical Specification (TS) Surveillance Requirements (SRs) for the emergency gas treatment system (EGTS) (TS 3.6.9) and auxiliary building gas treatment system (ABGTS) (TS 3.7.12), SR 3.6.9.1 and SR 3.7.12.1, respectively. These SRs currently require operating the ventilation system with the heaters operating for at least 10 continuous hours on a frequency of 31 days. Specifically, the SRs would be changed to require at least 15 continuous minutes of ventilation system operation with the heaters operating every 31 days. The licensee also included TS Bases changes that summarize and clarify the purpose of the TSs consistent with TSTF-522.

The availability of TSTF-522 was announced in the *Federal Register* (FR) on September 20, 2012 (77 FR 58421) as part of the consolidated line item improvement process. The licensee stated that the LAR is consistent with NRC-approved TSTF-522.

The NRC issued a proposed finding that the amendments involve no significant hazards consideration, published in the *Federal Register* on June 6, 2017 (82 FR 26139). The NRC has not received any public comments on this finding.

## 2.0 REGULATORY EVALUATION

The NRC's regulatory requirements related to the content of the TSs are contained in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.36. The regulations at 10 CFR 50.36 require that the TSs include items in the following categories: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) SRs; (4) design features; and (5) administrative controls. SRs are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the LCOs will be met.

One of the reasons air filtration and adsorption systems are required at nuclear power plants is to lower the concentration of airborne radioactive material that may be released from the site to the environment due to a design-basis event. Lowering the concentration of airborne radioactive materials can mitigate doses to plant operators and members of the public in the event of a design-basis event. A typical system consists of ventilation ductwork, fans, dampers, valves, instrumentation, prefilters or demisters, high efficiency particulate air (HEPA) filters, heaters, and activated charcoal adsorbers. These systems are tested by operating the systems and monitoring the response of the overall system as well as individual components. Laboratory tests of charcoal adsorbers are also performed to ensure the charcoal adsorbs an acceptable amount of radioactive gasses.

The regulatory requirements for design and testing of these systems are contained in 10 CFR 50.67, "Accident Source Term," and Part 100, "Reactor Site Criteria," as well as Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants": General Design Criterion (GDC) 19, "Control Room"; GDC 41, "Containment Atmosphere Cleanup"; GDC 42, "Inspection of Containment Atmosphere Cleanup Systems"; GDC 43, "Testing of Containment Atmosphere Cleanup System"; and GDC 61, "Fuel Storage and Handling and Radioactivity Control." The licensee stated in its LAR dated April 5, 2017, that the model safety evaluation discusses the applicable regulatory requirements and guidance, including applicable 10 CFR Part 50, Appendix A, GDC. However, the Watts Bar Units 1 and 2 Final Safety Analysis Report (FSAR) states that the units were designed to meet the intent of the "Proposed General Design Criteria for Nuclear Power Plant Construction Permits" published in July 1967. The Watts Bar units' construction permits were issued in January 1973. The FSAR, however, addresses the NRC GDC published as Appendix A to 10 CFR Part 50 in July 1971, including Criterion 4 as amended on October 27, 1987. Each criterion is followed by a discussion of the design features and procedures that meet the intent of the criteria in 10 CFR Part 50, Appendix A. Any exception to the 1971 GDC resulting from the earlier commitments is identified in the discussion of the corresponding criterion. References to other sections of the FSAR are given for system design details. Criteria 19, 41, 42, 43, and 61 are addressed in the Watts Bar FSAR.

Regulatory Guide (RG) 1.52, Revision 2, "Design, Testing, and Maintenance Criteria for Post-Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants" (ADAMS Accession No. ML003740139), was published in March 1978 to provide guidance and criteria acceptable to the NRC staff for licensees to implement the regulations in 10 CFR related to air filtration and adsorption systems.

Regulatory Position 4, "Maintenance," item 'd' of RG 1.52, Revision 2 stated that "Each ESF [engineered safety feature] atmosphere cleanup train should be operated at least 10 hours per month, with the heaters on (if so equipped), in order to reduce the buildup of moisture on the

adsorbers and HEPA filters.” The purpose of this position was to minimize the moisture content in the system and thereby enhance efficiency if the system were called upon to perform its design-basis function. Watts Bar TS SRs 3.6.9.1 and 3.7.12.1 currently require operating the heaters in the respective ventilation and filtering systems for at least 10 continuous hours every 31 days.

The NRC’s guidance for the format and content of licensee TSs can be found in NUREG-1431, “Standard Technical Specifications – Westinghouse Plants.” The current NUREG-1431, Revision 4 (April 2012), “Standard Technical Specifications – Westinghouse Plants, Volume 2, Bases” (ADAMS Accession No. ML12100A228), has systems similar to Watts Bar. STS 3.7.12, “Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS),” is similar to the ABGTS as described in Watts Bar TS 3.7.12. STS 3.6.13, “Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser),” is similar to the EGTS as described in Watts Bar TS 3.6.9.

STS SR Bases 3.6.13.1 explains that, for systems with heaters, operation with the heaters on for greater than or equal to 10 continuous hours reduces moisture buildup on the adsorbers and HEPA filters and that experience from filter testing at operating units indicates that the 10-hour period is adequate for moisture elimination on the adsorbers and HEPA filters. The 31 day frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability. In addition, the current STS SR Bases 3.7.12.1 describes that monthly heater operations dry out any moisture that may have accumulated in the charcoal from humidity in the ambient air and that systems with heaters must be operated greater than or equal to 10 continuous hours with the heaters energized. Systems without heaters need only be operated for greater than or equal to 15 minutes to demonstrate the function of the system.

Subsequently, the NRC staff was informed that 10 continuous hours of system operation would dry out the charcoal adsorbers for a brief period of time, but following heater de-energization, the level of moisture accumulation in adsorbers would rapidly return to the pre-test level. The NRC staff found this information persuasive and subsequently on June 3, 1999, issued NRC Generic Letter (GL) 99-02, “Laboratory Testing of Nuclear-Grade Activated Charcoal” (ADAMS Accession No. ML082350935 and errata sheet at ADAMS Accession No. ML031110094). GL 99-02 requested licensees to confirm that their charcoal testing protocols accurately reflected the adsorber gaseous activity capture capability. GL 99-02 also requested licensees to account for the effects of moisture accumulation in adsorbers.

The NRC updated RG 1.52, Revision 3 (June 2001), “Design, Inspection, and Testing Criteria for Air Filtration and Adsorption Units of Post-Accident Engineered-Safety-Feature Atmosphere Cleanup Systems in Light-Water-Cooled Nuclear Power Plants,” to include the new information (ADAMS Accession No. ML011710176). RG 1.52, Revision 3, Regulatory Position 6, “In-Place Testing Criteria,” item 6.1 states, “Each ESF atmosphere cleanup train should be operated continuously for at least 15 minutes each month, with the heaters on (if so equipped), to justify the operability of the system and all its components.” The NRC has since issued RG 1.52, Revision 4 (September 2012); however, Regulatory Position 6.1 remains substantively unchanged from Revision 3 (ADAMS Accession No. ML12159A013).

One of the reasons for the previous 10-hour requirement for ventilation system operation with heaters operating was to minimize the effects of moisture on the adsorbers’ ability to capture gaseous activity. However, these effects are already accounted for in the licensees’ ventilation



filter test program by performing testing at a high relative humidity in accordance with ASTM D3803-1989, "Standard Test Method for Nuclear-Grade Activated Carbon." The Watts Bar TS 5.7.2.14, "Ventilation Filter Testing Program (VFTP)," requires testing of charcoal adsorbers in a manner to account for the effects of moisture on the adsorbers' ability to capture gaseous activity.

### 3.0 TECHNICAL EVALUATION

Current testing requirements for the air filtration and adsorption systems at Watts Bar state that the systems should be operated for at least 10 continuous hours with heaters operating every 31 days for SR 3.6.9.1 and SR 3.7.12.1. These requirements are based on the NRC guidance for testing air filtration and adsorption systems that, as stated above, has been superseded. The latest NRC guidance states that at least 15 continuous minutes of ventilation system operation with heaters operating every 31 days is acceptable to justify operability of the system and all its components.

The licensee has proposed revising SR 3.6.9.1 and SR 3.7.12.1 that currently require operating the ventilation system for at least 10 continuous hours with the heaters operating every 31 days. These SRs would be changed to require at least 15 continuous minutes of ventilation system operation with the heaters operating every 31 days.

The NRC staff evaluated the licensee's proposed change against the applicable regulatory guidance in RG 1.52, Revision 4, guidance in the STSs as modified by TSTF-522, and the regulatory requirements of 10 CFR 50.36. The proposed change would require at least 15 minutes of system operation with heaters operating. Therefore, the NRC staff found that the proposed changes are consistent with guidance in RG 1.52, Revision 4.

The NRC staff evaluated the licensee's proposed change against the applicable regulatory guidance in the STSs, as modified by TSTF-522. The proposed changes adopt the TS format and content, to the extent practicable, contained in the changes made to NUREG-1431 by TSTF-522. Therefore, the NRC staff found that the proposed changes are consistent with guidance in the STSs, as modified by TSTF-522.

The NRC staff compared the proposed change to the existing SRs, as well as the regulatory requirements of 10 CFR 50.36. The existing SRs provide assurance that the necessary quality of ventilation systems and components will be maintained and that the LCOs will be met. The proposed changes reduce the amount of required system operational time from 10 hours to 15 minutes. The 10-hour operational requirement for heaters was based on using the SR to eliminate moisture in the adsorbers and thus ensure that the adsorbers would capture gaseous activity.

As discussed in Section 2.0 of this safety evaluation, the effects of moisture on the adsorbers' ability to capture gaseous activity are now accounted for in the licensee's Ventilation Filter Testing Program by performing testing at a high relative humidity. Since the SRs are no longer relied upon to ensure that the effects of moisture on the adsorbers' ability to capture gaseous activity are accounted for, the 10-hour heater operational requirement is unnecessary. The NRC staff found that reducing the required minimum system operation time to 15 minutes, consistent with RG 1.52, Revision 4, in conjunction with the ventilation filter testing program, is sufficient to justify operability of the system and all its components. The NRC staff found that the proposed SRs meet the regulatory requirements of 10 CFR 50.36 because they provide assurance that the necessary quality of ventilation systems and components will be maintained

and that the LCOs will be met. Therefore, the NRC staff concludes that the proposed changes are acceptable.

The regulation at 10 CFR 50.36 states, "A summary statement of the bases or reasons for such specifications ... shall also be included in the application, but shall not become part of the technical specifications." The licensee may make changes to the TS Bases without prior NRC staff review and approval in accordance with the TS 5.6, "Technical Specifications (TS) Bases Control Program." Accordingly, along with the proposed TS changes, the licensee also submitted TS Bases changes corresponding to the proposed TS changes. The NRC staff determined that these TS Bases changes are consistent with the proposed TS changes and provide the purpose for each requirement in the specification consistent with the "Commission's Final Policy Statement on Technical Specifications Improvements for Nuclear Power Reactors," dated July 2, 1993 (58 FR 39132).

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Tennessee State official was notified of the proposed issuance of the amendments on September 14, 2017. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20 and change SRs. 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 has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published in the *Federal Register* on June 6, 2017 (82 FR 26139). 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Larry L. Wheeler

Date: October 2, 2017

**SUBJECT:** BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3; WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS TO CHANGE TECHNICAL SPECIFICATIONS TO ADOPT TECHNICAL SPECIFICATIONS TASK FORCE TRAVELER-522, "REVISE VENTILATION SYSTEM SURVEILLANCE REQUIREMENTS TO OPERATE FOR 10 HOURS PER MONTH" (CAC NOS. MF9562, MF9563, MF9564, MF9565, AND MF9566) DATED OCTOBER 2, 2017

**DISTRIBUTION:**

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**\*via memorandum**

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NAME	FSaba	RSchaaf	BClayton	JWhitman*
DATE	09/01/2017	09/18/2017	09/15/2017	06/30/2017(WBN) 07/05/2017(BFN)
OFFICE	OGC – NLO (with comments)	DORL/LPL2-2/BC	DORL/LPL2-2/PM	
NAME	JWachutka	UShoop	FSaba	
DATE	09/13/2017	09/02/2017	10/02/2017	

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