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

July 30, 2012

Mr. Joseph W. Shea
Corporate Manager- Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 — ISSUANCE OF AMENDMENTS REGARDING REQUEST TO ADD TECHNICAL SPECIFICATION 3.7.3, 'CONTROL ROOM EMERGENCY VENTILATION (CREV) SYSTEM' (TAC NOS. ME4668, ME4669, AND ME4670) (TS-474)

Dear Mr. Shea:

The Commission has issued the enclosed Amendment Nos. 282, 308, and 267 to Renewed Facility Operating Licenses Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively. These amendments are in response to your application dated August 27, 2010, as supplemented by letters dated April 11, 2011, and January 13, 2012.

The amendment approves a revision of the proposed completion time from the initially requested 90 days for restoration of inoperable HEPA filters and charcoal adsorbers to 7 days to restore an inoperable HEPA filter and 14 days to restore an inoperable charcoal adsorber, provided the flowrate requirements of the Ventilation Filter Testing Program are maintained.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Eva A. Brown, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 282 to DPR-33
2. Amendment No. 308 to DPR-52
3. Amendment No. 267 to DPR-68
4. Safety Evaluation

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. 282
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 August 27, 2010, as supplemented on April 11, 2011, and January 13, 2012, 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. 282 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 14 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Douglas A. Broaddus, 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: July 30, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 282

RENEWED FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Replace Page 3 of Renewed Operating License DPR-33 with the attached 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	INSERT
3.7-8	3.7-8
3.7-8a	3.7-8a
3.7-9	3.7-9
3.7-10	3.7-10

(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 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 282, 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.

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Ventilation (CREV) System

LCO 3.7.3 Two CREV subsystems shall be OPERABLE.

---NOTE---
The main control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3, during operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREV subsystem inoperable for reasons other than Condition B, C, or D.	A.1	Restore CREV subsystem to OPERABLE status.	7 days
B. One or more CREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate action to implement mitigating actions	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological hazards will not exceed limits, and verify the CRE occupants are protected from smoke and chemical hazards.	24 hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Two CREV subsystems inoperable due to inoperable High Efficiency Particulate Air (HEPA) filter or charcoal adsorbers which do not impact ability of CREV subsystems to meet flowrate requirements specified in the Ventilation Filter Testing Program (VFTP).	C.1	Restore HEPA filter and one charcoal adsorber to OPERABLE status.	7 days
D. One CREV subsystem inoperable due to inoperable charcoal adsorber which does not impact the ability of CREV subsystem to meet flowrate requirements specified in the VFTP.	D.1	Restore charcoal adsorber to OPERABLE status.	14 days
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1	Be in MODE 3.	12 hours
	AND		
	E.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A or D not met during OPDRVs.	F.1 Place OPERABLE CREV subsystem in pressurization mode. OR F.2 Initiate action to suspend OPDRVs.	Immediately Immediately
G. Two CREV subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B or C.	G.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition C not met during OPDRVs. OR Two CREV subsystems inoperable during OPDRVs for reasons other than Condition C. OR One or more CREV subsystems inoperable due to an inoperable CRE Boundary during OPDRVs.	H.1 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for ≥ 10 continuous hours 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. 308
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 August 27, 2010, as supplemented on April 11, 2011 and January 13, 2012, 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-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. 308 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 14 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Douglas A. Broaddus, 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: July 30, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 308

RENEWED FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Replace Page 3 of Renewed Operating License DPR-52 with the attached 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	INSERT
3.7-9	3.7-9
3.7-9a	3.7-9a
3.7-10	3.7-10
3.7-11	3.7-11
3.7-12	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 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 308, 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 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

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Ventilation (CREV) System

LCO 3.7.3 Two CREV subsystems shall be OPERABLE.

---NOTE---
The main control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3, during operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREV subsystem inoperable for reasons other than Condition B, C, or D.	A.1	Restore CREV subsystem to OPERABLE status.	7 days
B. One or more CREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate actions to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological hazards will not exceed limits, and verify the CRE occupants are protected from smoke and chemical hazards.	24 Hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Two CREV subsystems inoperable due to inoperable High Efficiency Particulate Air (HEPA) filter or charcoal adsorbers which do not impact ability of CREV subsystems to meet flowrate requirements specified in the Ventilation Filter Testing Program (VFTP).	C.1	Restore HEPA filter and one charcoal adsorber to OPERABLE status.	7 days
D. One CREV subsystem inoperable due to inoperable charcoal adsorber which does not impact the ability of CREV subsystem to meet flowrate requirements specified in the VFTP.	D.1	Restore charcoal adsorber to OPERABLE status.	14 days
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1	Be in MODE 3.	12 hours
	AND		
	E.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A or D not met during OPDRVs.	F.1 Place OPERABLE CREV subsystem in pressurization mode. OR F.2 Initiate action to suspend OPDRVs.	Immediately Immediately
G. Two CREV subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B or C.	G.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition C not met during OPDRVs OR Two CREV subsystems inoperable during OPDRVs for reasons other than Condition C. OR One or more CREV subsystems inoperable due to an inoperable CRE Boundary during OPDRVs.	H.1 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for ≥ 10 continuous hours 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

UNITED STATES
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WASHINGTON, D.C. 20555-0001

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 267
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 August 27, 2010, as supplemented on April 11, 2011 and January 13, 2012, 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. 267 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 14 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Douglas A. Broaddus, 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: July 30, 2012

ATTACHMENT TO LICENSE AMENDMENT NO. 267

RENEWED FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Replace Page 3 of Renewed Operating License DPR-68 with the attached 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	INSERT
3.7-9	3.7-9
3.7-9a	3.7-9a
3.7-10	3.7-10
3.7-11	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 3458 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 267, 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.

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Ventilation (CREV) System

LCO 3.7.3 Two CREV subsystems shall be OPERABLE.

---NOTE---
The main control room envelope (CRE) boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3, during operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CREV subsystem inoperable for reasons other than Condition B, C, or D.	A.1	Restore CREV subsystem to OPERABLE status.	7 days
B. One or more CREV subsystems inoperable due to inoperable CRE boundary in MODE 1, 2, or 3.	B.1	Initiate actions to implement mitigating actions.	Immediately
	AND		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological hazards will not exceed limits, and verify the CRE occupants are protected from smoke and chemical hazards.	24 hours
	AND		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. Two CREV subsystems inoperable due to inoperable High Efficiency Particulate Air (HEPA) filter or charcoal adsorbers which do not impact ability of CREV subsystems to meet flowrate requirements specified in the Ventilation Filter Testing Program (VFTP).	C.1	Restore HEPA filter and one charcoal adsorber to OPERABLE status.	7 days
D. One CREV subsystem inoperable due to inoperable charcoal adsorber which does not impact the ability of CREV subsystem to meet flowrate requirements specified in the VFTP.	D.1	Restore charcoal adsorber to OPERABLE status.	14 days
E. Required Action and associated Completion Time of Condition A, B, C, or D not met in MODE 1, 2, or 3.	E.1	Be in MODE 3.	12 hours
	AND		
	E.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. Required Action and associated Completion Time of Condition A or D not met during OPDRVs.	F.1 Place OPERABLE CREV subsystem in pressurization mode. OR F.2 Initiate action to suspend OPDRVs.	Immediately Immediately
G. Two CREV subsystems inoperable in MODE 1, 2, or 3 for reasons other than Condition B or C.	G.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time of Condition C not met during OPDRVs. OR Two CREV subsystems inoperable during OPDRVs for reasons other than Condition C. OR One or more CREV subsystems inoperable due to an inoperable CRE Boundary during OPDRVs.	H.1 Initiate action to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Operate each CREV subsystem for ≥ 10 continuous hours 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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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO AMENDMENT NO. 282 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-33 AMENDMENT NO. 308 TO RENEWED FACILITY OPERATING LICENSE NO. DPR-52 AMENDMENT NO. 267 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 August 27, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102430528), as supplemented by letters dated April 11, 2011, and January 13, 2012 (ML11105A151 and ML12017A161, respectively), the Tennessee Valley Authority (the licensee) requested Technical Specification (TS) changes to licenses DPR-33 for Browns Ferry Nuclear Plant (BFN), Unit 1; DPR-52 for BFN Unit 2; and DPR-68 for BFN, Unit 3. The proposed changes add a new Action to TS 3.7.3, "Control Room Emergency Ventilation (CREV) System," to permit one or more CREV subsystems to be inoperable for up to 90 days when the inoperability is due to inoperable CREV System High Efficiency Particulate Air (HEPA) filter and/or charcoal adsorbers. This new Action would allow continued operation of BFN Units 1, 2, and 3 while preventative maintenance, corrective maintenance, modifications, and post-maintenance and modification testing of the HEPA filter and charcoal adsorbers are completed. This request was modified by the licensee in the letter dated January 13, 2012, to revise the proposed completion time from 90 days for restoration of inoperable HEPA filters and charcoal adsorbers to 7 days to restore an inoperable HEPA filter and 14 days to restore an inoperable charcoal adsorber, provided the flowrate requirements of the Ventilation Filter Testing Program are maintained. The proposed changes also correct errors in Unit 2 TS page header information that occurred during issuance of TS pages for a previous amendment.

The supplement dated April 11, 2011, 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 (NSHC) determination as published on November 30, 2010, in the *Federal Register* (75 FR 74097). However, the January 12, 2012, supplement did change the request, but did not expand the scope of the application beyond the original notice, nor did the change alter the U.S. Nuclear Regulatory Commission (NRC) staff's proposed NSHC.

2.0 REGULATORY EVALUATION

2.1 Requirements and Guidance

In Section 50.36 to Title 10 to the *Code of Federal Regulations* (10 CFR), the Commission established its regulatory requirements related to the content of the TSs. Consistent with 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings; (2) LCOs [Limiting Conditions for Operation]; (3) surveillance requirements; (4) design features; and (5) administrative controls.

The NRC staff evaluated the radiological consequences of the postulated design basis accidents (DBAs) against the dose criteria specified in 10 CFR 50.67, "Accident source term," and using the guidance described in Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors." The requirements of 10 CFR 50.67 state that the applicable dose criteria are 5 rem Total Effective Dose Equivalent (TEDE) in the control room, 25 rem TEDE at the exclusion area boundary (EAB), and 25 rem TEDE at the outer boundary of the low population zone (LPZ). RG 1.183 provides guidance to licensees on acceptable application of alternative source term (AST) submittals, including acceptable radiological analysis assumptions for use in conjunction with the accepted AST. The NRC staff also considered relevant information in the BFN, Units 1, 2, and 3 Updated Final Safety Analysis Report (UFSAR) and TSs. The BFN units were not licensed to many of the general design criteria (GDC) contained in 10 CFR Part 50, Appendix A, but Section 1.5.1.6 of the UFSAR contains criteria that are essentially equivalent to GDC. Maintaining compliance with the intent of these criteria, where applicable, was evaluated as part of the evaluation process.

By letter dated September 27, 2004, the NRC staff issued Amendment Nos. 251, 290, and 249 for the BFN, Units 1, 2, and 3, respectively (ADAMS Accession No. ML042730028), adopting the AST methodology by revising the current accident source term and replacing it with an accident source term as prescribed in 10 CFR 50.67. The analyses supporting the above mentioned amendments did not credit the CREV System charcoal filtration or iodine removal for any DBA analysis, and further did not credit filtration by HEPA filters in the main steam line break, the fuel-handling accident, and the control rod drop accident. The CREV HEPA filters were credited only in the loss-of-coolant accident (LOCA).

2.2 System Description

The CREV System processes outside air needed to provide ventilation and pressurization for the Control Room Habitability Zone (CRHZ) during isolated conditions. When the CRHZ is isolated, a fixed amount of outside air is processed through a HEPA filter bank, air heater, charcoal adsorbers, and post filters. HEPA filters are installed to remove particulate matter from the air stream. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay. A post filter downstream from the adsorption units collects carbon fines and provides additional protection against particulate matter release in case of failure of the upstream HEPA filter bank.

The seismically-qualified, safety-related CREV System is composed of two redundant trains.

3.0 TECHNICAL EVALUATION

3.1 Radiological Consequence Review

The TS limiting condition for operation (LCO) for Units 1, 2, and 3, TS 3.7.3, states "Two CREV subsystems shall be OPERABLE." The associated Surveillance Requirement, SR 3.7.3.2, requires that CREV testing be performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing to confirm HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal. During replacement or upon discovery of unacceptable HEPA filter and charcoal adsorber performance, the associated CREV subsystem is considered inoperable. Each inoperable charcoal adsorber affects the operability of the associated CREV subsystem. If the common HEPA filter is inoperable, both CREV subsystems would be inoperable. With both CREV subsystems inoperable, the current TSs would require an immediate shutdown of all operating units in accordance with LCO 3.0.3.

The proposed amendment adds a new Action C to TS 3.7.3 for the condition when both CREV subsystems are inoperable due to an inoperable HEPA filter, or for the condition when one or more CREV subsystems are inoperable due to an inoperable charcoal adsorber. The associated Required Action C.1 proposes a completion time of 7 days to restore the HEPA filter and/or 14 days to restore the charcoal adsorber to operable status prior to requiring an immediate shutdown. The proposed completion times are less than the completion time for TS 3.7.3, Action B, which addresses a breach of the Control Room Envelope (CRE) boundary.

Section 14.6, "Analysis of Design Basis Accidents - Uprated," of the UFSAR summarizes the evaluation of accidents that release fission products to the environment. Fission product releases to the environment affect the dose to control room personnel since the control rooms receive outside air from the ventilation systems. The bounding DBA in determining post-accident offsite and control room personnel dose is the design basis LOCA.

To support the proposed amendment, the licensee completed a LOCA analysis to evaluate the impact on the radiological dose to the operators in the BFN control rooms. The analysis did not credit the HEPA filter. In the letter dated, April 11, 2011, the licensee stated that the revised design basis LOCA control room dose was calculated using the same methodology that was approved for the BFN AST amendment. The April 11, 2011, letter also provided input that was used in the reanalysis. The licensee modified the following assumptions for the revised analysis:

(1) No credit taken for CREV HEPA filter efficiency – supports the proposed amendment change.

(2) Emergency Core Cooling System leak rate increased from 5 gpm to 20 gpm – revised to provide additional margin due to not crediting CREV HEPA filter efficiency.

(3) Leakage at base stack increases from 10 scfm to 20 scfm – revised to provide additional margin due to not crediting CREV HEPA filter efficiency.

(4) Reactor building free volume decreases from 1.9315×10^6 ft^3 to 1.1311×10^6 ft^3 – the lower value is the Unit 1 volume, which is a more conservative value.

The current licensing basis control room dose from a design basis LOCA is 1.62 rem. The revised analyses show that the control room dose from a design basis LOCA is 1.94 rem with no credit for either the HEPA filters or the charcoal adsorbers, which is below the regulatory criteria of 5 rem. The NRC staff performed independent calculations and confirmed the licensee's dose result. The EAB and the LPZ dose results are unaffected because the CREV system only provides filtration to the control room, not the environment.

The NRC staff finds that the licensee used methods consistent with regulatory requirements and guidance identified in Section 2.0 above. The staff also concludes that there is reasonable assurance that the licensee's estimate of control room dose will continue to comply with these criteria. The current licensing basis EAB and LPZ dose results remain the same and continue to comply with the regulatory requirements. Therefore, the proposed TS changes are acceptable with regard to the radiological consequences of postulated DBAs.

Based on the above evaluation, and considering that the licensee has used methodologies in the current BFN licensing basis to evaluate the impact of the proposed amendment on the radiological dose impact to the BFN control rooms, the NRC staff finds the licensee's evaluation acceptable.

3.2 Control Room Habitability

The licensee provided information to demonstrate that the CREVS will continue to provide a habitable environment during postulated design-basis events. The NRC staff reviewed the submittal to determine whether the change affected the facility's ability to maintain a habitable control room by ensuring that an accident arising from a radiological event, or other hazardous condition would not prevent the control room operators from controlling the reactor.

In the letter dated April 11, 2011 (ADAMS Accession No. ML11105A151) the licensee provided information revising the August 27, 2010, submittal to reflect that:

> Analyses associated with the prior approval of Alternate Source Term methodology for design basis accident dose consequences previously did not credit the CREV System charcoal adsorbers. Recent analyses have been performed to assess the post-accident 30-day control room dose removing credit for the CREV System HEPA [high efficiency particulate air] filter. The results indicate a minimal increase in dose consequences **(9.5% decrease in margin)** due to removing credit for the CREV System HEPA filter. Even with no credit for either the CREV System HEPA filter or CREV System charcoal filter, the resultant control room dose maintains more than 60% margin to the regulatory limit of 5 rem TEDE. As such there is no reduction in a margin of safety for any duration of inoperability of the CREV System HEPA filter or charcoal adsorbers. While the HEPA filter and charcoal adsorbers are not credited for accident mitigation, they remain required by the BFN TS for compliance with the LCO 3.7.3, "Control Room Emergency Ventilation (CREV) System," further minimizing any potential reduction in a margin of safety."

The licensee indicated that the new TS 3.7.3 Action C "[o]ne or more CREV subsystems inoperable due to inoperable HEPA filter or charcoal adsorber(s)," applies when two CREV subsystems are inoperable due to an inoperable HEPA filter or charcoal adsorbers. The NRC staff finds that proposed configurations are acceptable provided that the CREV system remains capable of meeting the flow rate requirements specified in the VFTP and habitability conditions in

the control room are maintained.

Based on the above, the NRC staff finds that the proposed CREV subsystem TS completion times should not affect the capability of the system to maintain a suitable environment in the control room for occupancy during normal and accident conditions.

3.3 Technical Specification Changes

The proposed changes add new Conditions C and D to TS 3.7.3, "Control Room Emergency Ventilation (CREV) System." New Condition C applies when two CREV subsystems are inoperable due to inoperable HEPA filter or charcoal adsorbers that do not impact the ability of the CREV subsystems to meet the flowrate requirements specified in the VFTP. The Required Action of new Condition C is to restore the HEPA filter and one charcoal adsorber to operable status within 7 days. New Condition D applies when one CREV is inoperable due to an inoperable charcoal adsorber that does not impact the ability of the CREV subsystems to meet the flowrate requirements specified in the VFTP. The Required Action of new Condition D is to restore the charcoal adsorber to operable status within 14 days.

The proposed new conditions describe ways the LCO can fail to be met. The NRC staff reviewed the proposed Required Actions and Completion Times given the CREV design basis and the amount of time necessary to perform the Required Actions. Since no credit is taken for filtration by the HEPA filter or charcoal adsorbers in the analysis for radiological doses to CRE occupants following the plant's DBAs and making repairs to the filter or adsorbers can take a significant time, the NRC staff found the proposed Required Actions and Completion Times acceptable. The NRC staff finds the addition of these new Conditions acceptable, as they meet the intent of 10 CFR 50.36 regarding those items to be included in TSs.

Based on the CREV subsystem maintaining the ability to meet the flowrate requirements contained in the VFTP and no credit is taken in the DBA for filtration in the dose analysis for CRE occupants, the NRC staff finds the revised completion times acceptable.

The licensee proposed to add a Condition to existing Condition F that would apply when Required Action C is not met within its associated completion time as well as re-lettering of the other TS Conditions and Required Actions in TS 3.7.3. The NRC staff determined these changes are editorial as they are necessary for consistency. The NRC staff also reviewed the proposed changes to the BFN Unit 2 TS headers. The staff found that the revised headers are consistent with the format for the remaining sections of the BFN Unit 2, TSs and are, therefore, acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Alabama State official was notified of the proposed issuance of the amendment. 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 has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (75 FR 74097, November 30, 2010). The amendment also relates to changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and 10 CFR 51.22(c)(10). 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) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: D. Duvigneaud
M. Hamm

Date: July 30, 2012

July 30, 2012

Mr. Joseph W. Shea
Corporate Manager- Nuclear Licensing
Tennessee Valley Authority
3R Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3 — ISSUANCE OF AMENDMENTS REGARDING REQUEST TO ADD TECHNICAL SPECIFICATION 3.7.3, 'CONTROL ROOM EMERGENCY VENTILATION (CREV) SYSTEM' (TAC NOS. ME4668, ME4669, AND ME4670) (TS-474)

Dear Mr. Shea:

The Commission has issued the enclosed Amendment Nos. 282, 308, and 267 to Renewed Facility Operating Licenses Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2, and 3, respectively. These amendments are in response to your application dated August 27, 2010, as supplemented by letters dated April 11, 2011, and January 13, 2012.

The amendment approves a revision of the proposed completion time from the initially requested 90 days for restoration of inoperable HEPA filters and charcoal adsorbers to 7 days to restore an inoperable HEPA filter and 14 days to restore an inoperable charcoal adsorber, provided the flowrate requirements of the Ventilation Filter Testing Program are maintained.

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,
/RA/
Eva A. Brown, Senior Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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

Enclosures:
1. Amendment No. 282 to DPR-33
2. Amendment No. 308 to DPR-52
3. Amendment No. 267 to DPR-68
4. Safety Evaluation

DISTRIBUTION:

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ADAMS Accession No. ML11189A217 * By email

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