



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-17-014

April 5, 2017

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Browns Ferry Nuclear Plant, Units 1, 2, and 3
Renewed Facility Operating License Nos. DPR-33, DPR-52, and DPR-68
NRC Docket Nos. 50-259, 50-260, and 50-296

Watts Bar Nuclear Plant, Units 1 and 2
Facility Operating License Nos. NPF-90 and NPF-96
NRC Docket Nos. 50-390 and 50-391

SUBJECT: **Application to Revise Technical Specifications to Adopt Technical Specification Task Force (TSTF)-522, "Revise Ventilation System Surveillance Requirements to Operate for 10 Hours per Month," Using the Consolidated Line Item Improvement Process (BFN-TS-500 and WBN-TS-17-12)**

In accordance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) 50.90, "Application for amendment of license, construction permit, or early site permit," Tennessee Valley Authority (TVA), is submitting request for amendments to Facility Operating License Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, respectively, and Facility Operating License Nos. NPF-90 and NPF-96 for the Watts Bar Nuclear Plant (WBN), Units 1 and 2, respectively.

The proposed amendments would modify TS Surveillance Requirements (SRs) that currently operate ventilation systems with charcoal filters for 10 hours each month in accordance with Technical Specification Task Force (TSTF) 522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month." Specifically, BFN SRs 3.6.4.3.1 and 3.7.3.1, and WBN SRs 3.6.9.1 and 3.7.12.1 are being revised to require operation of the systems for 15 continuous minutes.

Attachment 1 provides a description and assessment of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Attachment 2 provides the existing TS pages marked up to show the proposed changes. Attachment 3 provides existing TS Bases pages marked up to show the proposed changes. Attachments 4 and 5 to the enclosure provide the existing TS and Bases pages retyped to show the proposed changes.

Changes to the existing TS Bases are provided for information only and will be implemented under the Technical Specification Bases Control Program. TVA requests approval of the proposed license amendment within six months of the date of this letter, with implementation within 30 days of issuance.

TVA has determined that there are no significant hazards considerations associated with the proposed amendments and TS changes. The proposed amendments and TS changes qualify for a categorical exclusion from environmental review pursuant to the provisions of 10 CFR 51.22(c)(9). Additionally, in accordance with 10 CFR 50.91, a copy of this letter and attachments is being provided to the Alabama State Department of Public Health and the Division of Radiological Health - Tennessee State Department of Environment and Conservation.

There are no new regulatory commitments associated with this submittal. Please address any questions regarding this request to Mr. Edward D. Schrull at (423) 751-3850.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 5th day of April 2017.

Respectfully,



J. W. Shea
Vice President, Nuclear Licensing

Attachments:

1. Evaluation of Proposed Change
2. Proposed Technical Specification Changes for BFN Units 1, 2, and 3 and WBN Units 1 and 2 (Mark-Ups)
3. Proposed Technical Specification Bases Changes for BFN Units 1, 2, and 3 and WBN Units 1 and 2 (Mark-Ups) (For information only)
4. Revised Technical Specification Changes for BFN Units 1, 2, and 3 and WBN Units 1 and 2 (Clean Pages)
5. Revised Technical Specification Bases Changes for BFN Units 1, 2, and 3 and WBN Units 1 and 2 (Clean Pages)

cc (Attachments):

NRC Project Manager - Browns Ferry Nuclear Plant
NRC Project Manager - Watts Bar Nuclear Plant
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant
NRC Senior Resident Inspector - Watts Bar Nuclear Plant
NRC Regional Administrator - Region II
State Health Officer, Alabama Department of Public Health
Director, Division of Radiological Health, TN State Department of Environment and Conservation

ATTACHMENT 1
Evaluation of Proposed Change

Subject: Application to Revise Technical Specifications to Adopt Technical Specification Task Force (TSTF)-522, "Revise Ventilation System Surveillance Requirements to Operate for 10 Hours per Month," Using the Consolidated Line Item Improvement Process (BFN-TS-500 and WBN-TS-17-12)

1.0 DESCRIPTION

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

2.2 Optional Changes and Variations

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

4.0 ENVIRONMENTAL EVALUATION

ATTACHMENT 1

Evaluation of Proposed Change

1.0 DESCRIPTION

The proposed change revises the Surveillance Requirements which currently require operating ventilation systems with the heaters operating for a continuous 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 proposed amendment is consistent with TSTF-522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month."

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

The Tennessee Valley Authority (TVA) has reviewed the model safety evaluation (SE) published September 20, 2012, as part of the Federal Register Notice for Availability (77 FR 58421) This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-522, Revision 0. As described in the subsequent paragraphs, TVA has concluded that the justifications presented in the TSTF-522 proposal and the model safety evaluation prepared by the NRC staff are applicable to the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3 and the Watts Bar Nuclear Plant (WBN), Units 1 and 2, and justify these amendments for the incorporation of the changes to the technical specifications of the referenced plants.

The model safety evaluation discusses the applicable regulatory requirements and guidance, including applicable 10 CFR 50, Appendix A, General Design Criteria (GDC). BFN, Units 1, 2, and 3, were not licensed to the 10 CFR 50, Appendix A, GDC. The plants' Updated Final Safety Analysis Report (UFSAR), Appendix A, "Conformance to AEC Proposed General Design Criteria," provides an assessment 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), a review has determined that the plant-specific requirements are sufficiently similar to the Appendix A GDC as related to the proposed change. Therefore, TVA has concluded that the proposed change is applicable to BFN, Units 1, 2, and 3.

2.2 Optional Changes and Variations

TVA is not proposing any significant variations from the TS changes described in the TSTF-522, Revision 0, or the applicable parts of the NRC staff's model safety evaluation dated September 20, 2012 (77 FR 58421). The minor variations from the TS changes are as follows:

ATTACHMENT 1
Evaluation of Proposed Change

2.2.1 Browns Ferry Nuclear Plant, Units 1, 2, and 3

One of the two affected TS referenced in TSTF-522, Revision 0 for General Electric BWR/4 plants differs in number and name from the applicable system at BFN. Specifically, the TSTF lists TS 3.7.4 as the affected TS for the Main Control Room Environmental Control (MCREC) System. Standard TS (STS) 3.7.4 MCREC System corresponds to the BFN TS 3.7.3 Control Room Emergency Ventilation (CREV) System. This difference is administrative and does not affect the applicability of TSTF-522 to the BFN TSs.

TSTF-522 Technical Specification (BWR/4)	BFN Units 1, 2, and 3 Technical Specification
STS 3.7.4 MCREC System SR 3.7.4.1	TS 3.7.3 CREV System SR 3.7.3.1

2.2.2 Watts Bar Nuclear Plant, Units 1 and 2

Three of the six affected TS referenced in TSTF-522, Revision 0 for Westinghouse Owner's Group (WOG) STS differ in number and/or name for the applicable system at WBN. Specifically, the TSTF lists STS 3.6.13 as the affected TS for the Shield Building Air Cleanup System (SBACs) (Dual and Ice Condenser) and STS 3.7.12 for Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS). STS 3.6.13 SBACS corresponds to WBN TS 3.6.9 Emergency Gas Treatment System (EGTS) and TS 3.7.12 ECCS PREACS corresponds to WBN TS 3.7.12 Auxiliary Building Gas Treatment System (ABGTS). These differences are administrative and do not affect the applicability of TSTF-522 to the WBN TSs. In addition, STS 3.7.10, Control Room Emergency Filtration System (CREFS) corresponds to WBN TS 3.7.10, CREVS. However, this TS already includes SR 3.7.10.1, with a provision to operate each CREVS for 15 minutes. Therefore, no change to TS 3.7.10 is necessary, and TS 3.7.10 is not included in the scope of this license amendment request.

TSTF-522 includes WOG STS markups for STS 3.6.11, Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric). This STS is markup is not applicable to WBN, which utilizes an ice containment design.

TSTF-522 includes WOG STS markups for STS 3.7.13, Fuel Building Air Cleanup System (FBACS) and STS 3.7.14, PREACS. For WBN, these functions that are the subject of STS 3.7.13 and STS 3.7.14 are performed by the ABGTS. Therefore, the STS 3.7.13 and 3.7.14 markups are not applicable to WBN.

TSTF-522 Technical Specification (WOG)	WBN Units 1 and 2 Technical Specification
STS 3.6.11 ICS (Atmospheric and Subatmospheric)	Not applicable to WBN
STS 3.6.13 SBACs (Dual and Ice Condenser) SR 3.6.13.1	TS 3.6.9 EGTS SR 3.6.9.1
STS 3.7.10 CREFS	TS 3.7.10 CREVS Already implemented at WBN
STS 3.7.12 ECCS PREACS SR 3.7.12.1	TS 3.7.12 ABGTS SR 3.7.12.1
STS 3.7.13 FBACS	Not applicable to WBN
STS 3.7.14 PREACS	Not applicable to WBN

ATTACHMENT 1
Evaluation of Proposed Change

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, requests adoption of Technical Specification Task Force (TSTF) 522, Revision 0, "Revise Ventilation System Surveillance Requirements to Operate for 10 hours per Month," an NRC-approved change to the Standard Technical Specifications (STS). Specifically, BFN, Units 1, 2, and 3 Technical Specification (TS) 3.6.4.3, "Standby Gas Treatment (SGT) System," and TS 3.7.3, "Control Room Emergency Ventilation (CREV) System," include Surveillance Requirements (SRs) to operate each train/subsystem for a continuous 10 hour period every 31 days with heaters operating. The SRs are revised to require operation of the systems for 15 continuous minutes every 31 days with heaters operating.

Watts Bar Nuclear Plant (WBN), Units 1 and 2, also requests adoption of TSTF-522, Revision 0. TS 3.6.9, "Emergency Gas Treatment System (EGTS)," and TS 3.7.12, "Auxiliary Building Gas Treatment System (ABGTS)," include SRs to operate each train/subsystem for a continuous 10 hour period every 31 days with heaters operating. The SRs are revised to require operation of the systems for 15 continuous minutes every 31 days with heaters operating.

As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change replaces existing Surveillance Requirements to operate the SGT and CREV systems for BFN and the EGT and ABGT systems for WBN, equipped with electric heaters for a continuous 10 hour period every 31 days with a requirement to operate the systems for 15 continuous minutes with heaters operating.

These systems are not accident initiators and therefore, these changes do not involve a significant increase in the probability of an accident. The proposed system and filter testing changes are consistent with current regulatory guidance for these systems and will continue to assure that these systems perform their design function which may include mitigating accidents. Thus the change does not involve a significant increase in the consequences of an accident.

Therefore, it is concluded that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

ATTACHMENT 1
Evaluation of Proposed Change

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change replaces existing Surveillance Requirements to operate the SGT and CREV systems for BFN and the EGT and ABGT systems for WBN, equipped with electric heaters for a continuous 10 hour period every 31 days with a requirement to operate the systems for 15 continuous minutes with heaters operating.

The change proposed for these ventilation systems does not change any system operations or maintenance activities. Testing requirements will be revised and will continue to demonstrate that the Limiting Conditions for Operation are met and the system components are capable of performing their intended safety functions. The change does not create new failure modes or mechanisms and no new accident precursors are generated.

Therefore, it is concluded that this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed change replaces existing Surveillance Requirements to operate the SGT and CREV systems for BFN and the EGT and ABGT systems for WBN, equipped with electric heaters for a continuous 10 hour period every 31 days with a requirement to operate the systems for 15 continuous minutes with heaters operating.

The design basis for the ventilation systems' heaters is to heat the incoming air which reduces the relative humidity. The heater testing change proposed will continue to demonstrate that the heaters are capable of heating the air and will perform their design function. The proposed change is consistent with regulatory guidance.

Therefore, it is concluded that this change does not involve a significant reduction in a margin of safety. Based on the above, TVA concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure.

Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Attachment 2

**Proposed Technical Specification Changes for BFN Units 1, 2, and 3
and WBN Units 1 and 2 (Mark-Ups)**

minutes

15

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for \geq 10 continuous hours 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 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

Note: Red annotations in the original image show 'minutes' in a box with an arrow pointing to the word 'hours' in the first row, and '15' in a box with an arrow pointing to the number '10' in the same row.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
<div data-bbox="282 306 444 373" style="border: 1px solid red; padding: 2px;">minutes</div>	Operate each SGT subsystem for \geq 10 <div data-bbox="1040 212 1135 254" style="border: 1px solid red; padding: 2px;">15</div> continuous hours 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 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

minutes

15

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 10 continuous hours 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

15

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
	minutes	
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

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 ≥ 1540 continuous minutes hours 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 ≥ 1540 continuous minutes hours 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 ≥ 9300 and ≤ 9900 cfm.	18 months on a STAGGERED TEST BASIS

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 1540 minutes 1540 hours 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 1540 continuous minutes hours 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

Attachment 3

**Proposed Technical Specification Bases Changes for BFN Units 1, 2, and 3
and WBN Units 1 and 2 (Mark-Ups)**

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for \geq ~~10~~ continuous ~~hours~~ ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Operation with the heaters on (automatic heater cycling to maintain temperature) for \geq 10 continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters.~~ The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

15

minutes
with
heaters on

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. ~~Monthly heater operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. The CREV System must be operated for ≥ 10 continuous hours with the heaters energized to dry out any moisture and to demonstrate the function of the system.~~ Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ 10 continuous hours ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters.~~ The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

15

minutes
with
heaters on

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. ~~Monthly heater operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. The CREV System must be operated for ≥ 10 continuous hours with the heaters energized to dry out any moisture and to demonstrate the function of the system.~~ Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

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BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for \geq ~~10~~ continuous ~~hours~~ ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Operation with the heaters on (automatic heater cycling to maintain temperature) for \geq 10 continuous hours every 31 days eliminates moisture on the adsorbers and HEPA filters.~~ The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

15

minutes
with
heaters on

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action.

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. ~~Monthly heater operation dries out any moisture that has accumulated in the charcoal as a result of humidity in the ambient air. The CREV System must be operated for ≥ 10 continuous hours with the heaters energized to dry out any moisture and to demonstrate the function of the system.~~ Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

BACKGROUND
(continued)

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included to reduce the relative humidity of the airstream on systems that operate in high humidity. ~~Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers.~~ Cross-over flow ducts are provided between the two trains to allow the active train to draw air through the inactive train and cool the air to keep the charcoal beds on the inactive train from becoming too hot due to absorption of fission products.

The containment annulus vacuum fans maintain the annulus at - 5 inches water gauge vacuum during normal operations. During accident conditions, the containment annulus vacuum fans are isolated from the air cleanup portion of the system.

The EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE
SAFETY ANALYSES

The EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) considers two different single failure scenarios. The first one assumes that only one train of the EGTS is functional due to a postulated single failure that disables the other train. An alternate scenario assumes a single failure of the pressure control loop associated with one train of PCOs. The first scenario is bounding for thyroid dose while the alternate scenario is bounding for beta and gamma doses. The accident analysis accounts for the reduction in airborne radioactive material provided by the number of filter trains in operation for each failure scenario. The amount of fission products available for release from containment is determined for a LOCA.

The safety analysis conservatively assumes the annulus is at atmospheric pressure prior to the LOCA. The analysis further assumes that upon receipt of a Containment Isolation Phase A (CIA) signal from the RPS, the EGTS fans automatically start and achieve a minimum flow of 3600 cfm per train within 18 seconds (20 seconds from the initiating event.) This does not include 10 seconds for diesel generator startup. The analysis shows that the annulus pressure will rise to a positive value and then decrease to the EGTS control point for a single failure of one EGTS train, or slightly more negative for a single failure of a pressure control loop associated with one train of PCOs. The normal alignment for both EGTS control loops is the A-Auto position. With both EGTS control loops in A-Auto, both trains will function upon initiation of a CIA signal. In the event of a LOCA, the annulus vacuum control system isolates and both trains of the EGTS pressure control loops will be placed in service to maintain the required negative pressure. If annulus vacuum is lost during normal operations, the A-Auto position is unaffected by the loss of vacuum. This operational configuration is acceptable because the accident dose analysis conservatively assumes the annulus is at atmospheric pressure at event initiation. (Ref. 6)

The EGTS satisfies Criterion 3 of the NRC Policy Statement.

(continued)

BASES

ACTIONS
(continued)B.1 and B.2

most repairs. If the EGTS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTSSR 3.6.9.1

Operating each EGTS train for ≥ 15 minutes with heaters on ~~40 hours~~ ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. 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.

SR 3.6.9.2

This SR verifies that the required EGTS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP-Technical Specification Section 5.7.2.14). The EGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP. It should be noted that for the EGTS, the VFTP pressure drop value across the entire filtration unit does not account for instrument error (Ref. 5).

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

~~Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for ≥ 10 continuous hours with the heaters energized.~~ The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 8). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

BACKGROUND
(continued)

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included to reduce the relative humidity of the airstream on systems that operate in high humidity. ~~Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers.~~ Cross-over flow ducts are provided between the two trains to allow the active train to draw air through the inactive train and cool the air to keep the charcoal beds on the inactive train from becoming too hot due to absorption of fission products.

The containment annulus vacuum fans maintain the annulus at -5 inches water gauge vacuum during normal operations. During accident conditions, the containment annulus vacuum fans are isolated from the air cleanup portion of the system.

The EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE
SAFETY
ANALYSES

The EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) considers two different single failure scenarios. The first one assumes that only one train of the EGTS is functional due to a postulated single failure that disables the other train. An alternate scenario assumes a single failure of the pressure control loop associated with one train of PCOs. The first scenario is bounding for thyroid dose while the alternate scenario is bounding for beta and gamma doses. The accident analysis accounts for the reduction in airborne radioactive material provided by the number of filter trains in operation for each failure scenario. The amount of fission products available for release from containment is determined for a LOCA.

The safety analysis conservatively assumes the annulus is at atmospheric pressure prior to the LOCA. The analysis further assumes that upon receipt of a Containment Isolation Phase A (CIA) signal from the RPS, the EGTS fans automatically start and achieve a minimum flow of 3600 cfm (per train) within 18 seconds (20 seconds from the initiating event.) This does not include 10 seconds for diesel generator startup.

(continued)

BASES

ACTIONS
(continued)A.1

With one EGTS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7-day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant EGTS train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

B.1 and B.2

If the EGTS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTSSR 3.6.9.1

Operating each EGTS train for ≥ 15 minutes ~~10 hours with heaters on~~ ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~Operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. 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.

SR 3.6.9.2

This SR verifies that the required EGTS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP - Technical Specification Section 5.7.2.14). The EGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations).

(continued)

BASES (continued)

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7-day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1 and B.2

When Required Action A.1 cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

~~Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. The system must be operated for ≥ 10 continuous hours with the heaters energized.~~ The 31-day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 7). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations).

(continued)

BASES (continued)

Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

Attachment 4

**Revised Technical Specification Changes for BFN Units 1, 2, and 3
and WBN Units 1 and 2 (Clean)**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 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 ≥ 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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 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 ≥ 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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.4.3.1	Operate each SGT subsystem for ≥ 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 ≥ 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

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 ≥ 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 ≥ 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 ≥ 9300 and ≤ 9900 cfm.	18 months on a STAGGERED TEST BASIS

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 ≥ 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 ≥ 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 ≥ 9300 cfm and ≤ 9900 cfm.	18 months on a STAGGERED TEST BASIS

Attachment 5

**Revised Technical Specification Bases Changes for BFN Units 1, 2, and 3
and WBN Units 1 and 2 (Clean)**

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ 15 continuous minutes with heaters on ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ 15 continuous minutes with heaters on ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.6.4.3.1

Operating each SGT subsystem for ≥ 15 continuous minutes with heaters on ensures that the subsystems are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls and the redundancy available in the system.

SR 3.6.4.3.2

This SR verifies that the required SGT filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). This SR will also include a chemical smoke test to check the sealing of gaskets for filter housing doors.

Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES (continued)

SURVEILLANCE
REQUIREMENTS

SR 3.7.3.1

This SR verifies that a subsystem in a standby mode starts on demand and continues to operate. Standby systems should be checked periodically to ensure that they start and function properly. As the environmental and normal operating conditions of this system are not severe, testing each subsystem once every month provides an adequate check on this system. Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Furthermore, the 31 day Frequency is based on the known reliability of the equipment and the two subsystem redundancy available.

SR 3.7.3.2

This SR verifies that the required CREV testing is performed in accordance with the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

BACKGROUND
(continued)

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included to reduce the relative humidity of the airstream on systems that operate in high humidity. Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Cross-over flow ducts are provided between the two trains to allow the active train to draw air through the inactive train and cool the air to keep the charcoal beds on the inactive train from becoming too hot due to absorption of fission products.

The containment annulus vacuum fans maintain the annulus at - 5 inches water gauge vacuum during normal operations. During accident conditions, the containment annulus vacuum fans are isolated from the air cleanup portion of the system.

The EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE
SAFETY ANALYSES

The EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) considers two different single failure scenarios. The first one assumes that only one train of the EGTS is functional due to a postulated single failure that disables the other train. An alternate scenario assumes a single failure of the pressure control loop associated with one train of PCOs. The first scenario is bounding for thyroid dose while the alternate scenario is bounding for beta and gamma doses. The accident analysis accounts for the reduction in airborne radioactive material provided by the number of filter trains in operation for each failure scenario. The amount of fission products available for release from containment is determined for a LOCA.

The safety analysis conservatively assumes the annulus is at atmospheric pressure prior to the LOCA. The analysis further assumes that upon receipt of a Containment Isolation Phase A (CIA) signal from the RPS, the EGTS fans automatically start and achieve a minimum flow of 3600 cfm per train within 18 seconds (20 seconds from the initiating event.) This does not include 10 seconds for diesel generator startup. The analysis shows that the annulus pressure will rise to a positive value and then decrease to the EGTS control point for a single failure of one EGTS train, or slightly more negative for a single failure of a pressure control loop associated with one train of PCOs. The normal alignment for both EGTS control loops is the A-Auto position. With both EGTS control loops in A-Auto, both trains will function upon initiation of a CIA signal. In the event of a LOCA, the annulus vacuum control system isolates and both trains of the EGTS pressure control loops will be placed in service to maintain the required negative pressure. If annulus vacuum is lost during normal operations, the A-Auto position is unaffected by the loss of vacuum. This operational configuration is acceptable because the accident dose analysis conservatively assumes the annulus is at atmospheric pressure at event initiation. (Ref. 6)

The EGTS satisfies Criterion 3 of the NRC Policy Statement.

(continued)

BASES

ACTIONS
(continued)B.1 and B.2

most repairs. If the EGTS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTSSR 3.6.9.1

Operating each EGTS train for ≥ 15 minutes with heaters on ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available.

SR 3.6.9.2

This SR verifies that the required EGTS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP-Technical Specification Section 5.7.2.14). The EGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP. It should be noted that for the EGTS, the VFTP pressure drop value across the entire filtration unit does not account for instrument error (Ref. 5).

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 8). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

BACKGROUND
(continued)

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters are included to reduce the relative humidity of the airstream on systems that operate in high humidity. Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. Cross-over flow ducts are provided between the two trains to allow the active train to draw air through the inactive train and cool the air to keep the charcoal beds on the inactive train from becoming too hot due to absorption of fission products.

The containment annulus vacuum fans maintain the annulus at -5 inches water gauge vacuum during normal operations. During accident conditions, the containment annulus vacuum fans are isolated from the air cleanup portion of the system.

The EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis.

APPLICABLE
SAFETY
ANALYSES

The EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) considers two different single failure scenarios. The first one assumes that only one train of the EGTS is functional due to a postulated single failure that disables the other train. An alternate scenario assumes a single failure of the pressure control loop associated with one train of PCOs. The first scenario is bounding for thyroid dose while the alternate scenario is bounding for beta and gamma doses. The accident analysis accounts for the reduction in airborne radioactive material provided by the number of filter trains in operation for each failure scenario. The amount of fission products available for release from containment is determined for a LOCA.

The safety analysis conservatively assumes the annulus is at atmospheric pressure prior to the LOCA. The analysis further assumes that upon receipt of a Containment Isolation Phase A (CIA) signal from the RPS, the EGTS fans automatically start and achieve a minimum flow of 3600 cfm (per train) within 18 seconds (20 seconds from the initiating event.) This does not include 10 seconds for diesel generator startup.

(continued)

BASES

ACTIONS
(continued)A.1

With one EGTS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7-day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant EGTS train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

B.1 and B.2

If the EGTS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTSSR 3.6.9.1

Operating each EGTS train for ≥ 15 minutes with heaters on ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31-day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available.

SR 3.6.9.2

This SR verifies that the required EGTS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP - Technical Specification Section 5.7.2.14). The EGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 4). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations).

(continued)

BASES (continued)

ACTIONS

A.1

With one ABGTS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the ABGTS function. The 7-day Completion Time is based on the risk from an event occurring requiring the inoperable ABGTS train, and the remaining ABGTS train providing the required protection.

B.1 and B.2

When Required Action A.1 cannot be completed within the associated Completion Time, or when both ABGTS trains are inoperable, the plant must be placed in a MODE in which the LCO does not apply. To achieve this status, the plant must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE
REQUIREMENTS

SR 3.7.12.1

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Operation with the heaters on for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that heater failure, blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 31-day Frequency is based on the known reliability of the equipment and the two train redundancy available.

SR 3.7.12.2

This SR verifies that the required ABGTS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABGTS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 7). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)