Tennessee Valley Authority, Post Office Box 2000, Decatur, Alabama 35609-2000

December 19, 2008

TVA-BFN-TS-444

10 CFR 50.90

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555-0001

In the Matter of	)	Docket Nos. 50-259
Tennessee Valley Authority	)	50-260
		50-296

BROWNS FERRY NUCLEAR PLANT (BFN) - RESPONSE FOR ADDITIONAL INFORMATION REGARDING UNITS 1, 2, AND 3 - TECHNICAL SPECIFICATIONS (TS) CHANGE 444 - ADOPTION OF CHANGES TO STANDARD TECHNICAL SPECIFICATIONS UNDER TECHNICAL SPECIFICATION TASK FORCE (TSTF) CHANGE NUMBER - 448, REVISION 3, REGARDING CONTROL ROOM ENVELOPE HABITABILITY

By letter dated March 27, 2008 (Reference 1), TVA requested an amendment to the TSs consisting of a Consolidated Line Item Improvement that would modify the TS requirements related to control room envelope habitability in accordance with TSTF-448, Revision 3. The proposed amendment adopts changes to TS Section 3.7.3 Control Room Emergency Ventilation (CREV) system and adds TS Section 5.5.13, Control Building Envelope Habitability Program, consistent with TSTF - 448, Revision 3.

This letter responds to the October 15, 2008, Request for Additional Information (RAI) (Reference 2) regarding proposed TS - 444.

Enclosure 1 provides TVA's reply to NRC's RAI questions. Enclosures 2 and 3 provide a revision to the Units 1, 2, and 3 TS and TS Bases pages marked-up to show the proposed change. The Bases pages in Enclosure 3 are included to aid the staff in their review and are for information only. Enclosure 4 revised the period for Commitment 1 in the March 27, 2008 letter, performing an assessment of the CRE Habitability.

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NRR

Because of NRC's RAI questions, TVA has revised Enclosures 2 and 3 originally submitted in the March 27, 2008 letter. TVA's revised enclosures are similar to the TSs and TSs Bases approved for Duane Arnold on June 24, 2008 (Reference 3).

TVA is requesting approval of this TS change by April 1, 2009, and that the implementation of the revised TS be made within 60 days of NRC approval.

The revised pages provided in Enclosure 2 do not alter the original determination that there are no significant hazards considerations associated with the proposed changes, nor do they alter the originally submitted Environmental Assessment and Finding of No Significant Impact provided by the March 27, 2008 letter. Additionally, in accordance with 10 CFR 50.91(b)(1), TVA is sending a copy of this letter and the Enclosures to the Alabama State Department of Public Health.

If you have any questions about this TS change, please contact me at (256) 729-2636.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 19th, 2008.

Sincerely,

F. R. Godwin
Manager of Licensing
and Industry Affairs

Enclosures:

1. Reply to Request for Additional Information
2. Proposed Technical Specifications Changes (revised mark-up)
3. Proposed Changes to Technical Specifications Bases Pages (revised mark-up)
4. List of Regulatory Commitments (Revised)

References:

1. TVA letter to NRC dated March 27, 2008: Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Change 444 - Adoption of Changes to Standard Technical Specifications Under technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability (ML080910360).

2. E-mail from NRC, Eva Brown, to TVA, Michael Brandon, Dated October 15, 2008: Browns Ferry TSTF - 448.

3. NRC letter to Duane Arnold Energy Center Dated June 24, 2008: Duane Arnold Energy Center - Issuance of Amendment Regarding Adoption of Changes to TSTF - 448 Revision 3, "Control Room Envelope Habitability." (ML081690425).

cc (Enclosures):

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Enclosure 1

Browns Ferry Nuclear Plant (BFN)
Units 1, 2, and 3

Technical Specifications (TS) Change 444

Adoption of Changes to Standard Technical Specifications Under Technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability

Reply to Request for Additional Information

NRC Request 1

The licensee stated that the Control Room Emergency Ventilation (CREV) system at BFN was not designed to protect the control room envelope (CRE) occupants from Chemical and Smoke hazards and therefore references to Chemical and Smoke hazards are not included in the proposed revisions to TS Sections 3.7.3 and 5.5.13, and TS Bases 3.7.3. This resulted in significant deviations from the model safety evaluation for TSTF-448. While minor deviations to suit the licensee needs may be acceptable, entire removal of chemical and smoke hazards from control room habitability in Technical Specifications is not acceptable to staff. Even if quantitative requirements do not exist for smoke and chemical hazards, a qualitative discussion should at least be included in the control room habitability sections of the Technical Specifications with supporting basis provided in Technical Specification Bases section.

TVA Reply 1

TVA has revised the TS and TS Bases Section 3.7.3, CREV System, provided in the March 27, 2008 (Reference 1), proposed TSs change. Although the CREV System design does not include the protection of the CRE occupants from smoke and chemical hazards, TVA has included use of the CRE as a means to protect the CRE occupants from smoke and chemical hazards. TVA has included revised Enclosures 2 and 3 as part of this letter. The revised enclosures are similar to the TSs and TSs Bases approved for Duane Arnold on June 24, 2008 (Reference 2).

NRC Request 2

In Enclosure 1 to your letter dated March 27, 2008, a reference was made to NEI 99-03, Revision 1. The same document was also referenced (as Reference 7) in the TS Bases 3.7.3. The NRC staff has neither formally endorsed NEI 99-03, Revision 1 nor has it reviewed this document. If exceptions or deviations to NEI 99-03, Revision 0 (June, 2001) are desired in support of this license amendment request, please indicate what they are and the supporting basis for the request.

TVA Reply 2

TVA has revised the reference to NEI 99-03, Control Room habitability Assessment Guidance, from Revision 1 to Revision 0. This change is highlighted in the "References" Section of TS Bases 3.7.3, CREV System, included in Enclosure 3 of this letter.

References:

1. TVA letter to NRC Dated March 27, 2008: Browns Ferry Nuclear Plant (BFN) - Units 1, 2, and 3 - Technical Specifications (TS) Change 444 - Adoption of Changes to Standard Technical Specifications Under technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability (ML080910360).

2. NRC letter to Duane Arnold Energy Center Dated June 24, 2008: Duane Arnold Energy Center - Issuance of Amendment Regarding Adoption of Changes to TSTF - 448 Revision 3, "Control Room Envelope Habitability." (ML081690425).

Enclosure 2

Browns Ferry Nuclear Plant (BFN)
Units 1, 2, and 3

Technical Specifications (TS) Change 444

Adoption of Changes to Standard Technical Specifications Under Technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability

Proposed Technical Specifications Changes (Revised Mark-up)

TVA has revised the enclosed pages. A line is drawn through the deleted text and a double underline for new or revised text. TVA highlighted the text revised because of the NRC's RAI questions.

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.	A.1 Restore CREV subsystem to OPERABLE status.	7 days
B. ~~Two~~ One or More CREV subsystems inoperable due to inoperable CRE ~~control room~~ boundary.	B.1 Initiate action to implement mitigating actions. AND B.2 Verify mitigating actions ensure CRE occupant exposures to radiological hazards will not exceed limits, and verify by administrative means the CRE occupants are protected from smoke and chemical hazards. AND B.~~1.~~3 Restore CRE boundary to OPERABLE status.	Immediately 24 Hours ~~24 Hours~~ 90 days

C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F.1 Two CREV subsystems inoperable during OPDRVs for reasons other than Condition B.	F.1 Initiate action to suspend OPDRVs.	Immediately
OR	AND	
F.2 Required actions and Completion times of Condition B not met during OPDRVS.	F.2 Initiate Actions 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 Ventilation Filter Testing Program (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. ~~Verify each CREV subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the outdoors during the pressurization mode of operation at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm.~~	In accordance with the Control Room Envelope Habitability Program ~~24 months on a STAGGERED TEST BASIS~~

5.5.12 Primary Containment Leakage Rate Testing Program (continued)

Leakage Rate acceptance criteria are:

a. The primary containment leakage rate acceptance criteria is ≤ 1.0 L_a. During the first unit startup following the testing performed in accordance with this program, the leakage rate acceptance criteria are ≤ 0.60 L_a for the Type B and Type C tests, and ≤ 0.75 L_a for the Type A test; and

b. Air lock testing acceptance criteria are:

1) Overall air lock leakage rate ≤ 0.05 L_a when tested at ≥ P_a.

2) Air lock door seals leakage rate is ≤ 0.02 L_a when the overall air lock is pressurized to ≥ 2.5 psig for at least 15 minutes.

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program. The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

5.5.13 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation (CREV) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room

(continued)

Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the CREV System, operating at the flow rate required by the VFTP, at a frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

(continued)

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 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.	A.1	Restore CREV subsystem to OPERABLE status.	7 days
B. ~~Two~~ One or more CREV subsystems inoperable due to inoperable control room boundary in MODES 1, 2, and 3.	B.1	Initiate actions to implement mitigating actions.	Immediately
	AND		24 Hours
	B.2	Verify mitigating actions ensure CRE occupant exposures will not exceed limits, and verify by administrative means CRE occupants are protected from smoke and chemical hazards.	
	AND		
	B.~~1~~3	Restore CRE boundary to OPERABLE status.	~~24 hours~~ 90 days

C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1	Be in MODE 3.	12 hours
	AND		
	C.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

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

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F.1 Two CREV subsystems inoperable during OPDRVs for reasons other than Condition B OR F.2 Required actions and Completion times of Condition B not met during OPDRVs.	F.1 Initiate action to suspend OPDRVs. AND F.2 Initiate actions to suspend OPDRVs	Immediately 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 Ventilation Filter Testing Program (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. ~~Verify each CREV subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the outdoors during the pressurization mode of operation at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm.~~	In accordance with the Control Room Envelope habitability Program ~~24 months on a STAGGERED TEST BASIS~~

5.5.12 Primary Containment Leakage Rate Testing Program (continued)

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 50.6 psig. The maximum allowable primary containment leakage rate, L_a, shall be 2% of primary containment air weight per day at P_a.

Leakage Rate acceptance criteria are:

a. The primary containment leakage rate acceptance criteria is ≤ 1.0 L_a. During the first unit startup following the testing performed in accordance with this program, the leakage rate acceptance criteria are ≤ 0.60 L_a for the Type B and Type C tests, and ≤ 0.75 L_a for the Type A test; and

b. Air lock testing acceptance criteria are:

   1) Overall air lock leakage rate ≤ 0.05 L_a when tested at $\geq P_a$.

   2) Air lock door seals leakage rate is ≤ 0.02 L_a when the overall air lock is pressurized to ≥ 2.5 psig for at least 15 minutes.

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program. The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

5.5.13 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation (CREV) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the CREV System, operating at the flow rate required by the VFTP, at a frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

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 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.	A.1 Restore CREV subsystem to OPERABLE status.	7 days
B. ~~Two~~ One or more CREV subsystems inoperable due to inoperable ~~control room~~ CRE boundary in MODES 1, 2, and 3.	B.1 Initiate actions to implement mitigating actions. AND B.2 Verify mitigating actins ensure CRE occupant exposures to radiological hazards will not exceed limits, and verify by administrative means the CRE occupants are protected form smoke and chemical hazards. AND B.~~1~~3 Restore CRE boundary to OPERABLE status.	Immediately 24 hours ~~24 hours~~ 90 days

C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 AND C.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours

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ACTIONS (continued)

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

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F.1 Two CREV subsystems inoperable during OPDRVs for reasons other than Condition B. OR F.2 Required actions and Completion times of Condition B not met during OPDRVs.	F.1 Initiate action to suspend OPDRVs. AND F.2 Initiate actions 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 Ventilation Filter Testing Program (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. ~~Verify each CREV subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the outdoors during the pressurization mode of operation at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm.~~	In accordance with the Control Room Envelope Habitability Program 24 months on a STAGGERED TEST BASIS

5.5.12 Primary Containment Leakage Rate Testing Program (continued)

The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 50.6 psig. The maximum allowable primary containment leakage rate, L_a, shall be 2% of primary containment air weight per day at P_a.

Leakage Rate acceptance criteria are:

a. The primary containment leakage rate acceptance criteria is ≤ 1.0 L_a. During the first unit startup following the testing performed in accordance with this program, the leakage rate acceptance criteria are ≤ 0.60 L_a for the Type B and Type C tests, and ≤ 0.75 L_a for the Type A test; and

b. Air lock testing acceptance criteria are:

   1) Overall air lock leakage rate ≤ 0.05 L_a when tested at $\geq P_a$.

   2) Air lock door seals leakage rate is ≤ 0.02 L_a when the overall air lock is pressurized to ≥ 2.5 psig for at least 15 minutes.

The provisions of SR 3.0.2 do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program. The provisions of SR 3.0.3 are applicable to the Primary Containment Leakage Rate Testing Program.

5.5.13 Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Emergency Ventilation (CREV) System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

a. The definition of CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

c. Requirements for (i) determining the unfiltered air inleakage past the CRE boundary into the CRE in accordance with the testing methods and at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors," Revision 0, May 2003, and (ii) assessing CRE habitability at the Frequencies specified in Sections C.1 and C.2 of Regulatory Guide 1.197, Revision 0.

d. Measurement, at designated locations, of the CRE pressure relative to all external areas adjacent to the CRE boundary during the pressurization mode of operation by one subsystem of the CREV System, operating at the flow rate required by the VFTP, at a frequency of 24 months on a STAGGERED TEST BASIS. The results shall be trended and used as part of the periodic assessment of the CRE boundary.

e. The quantitative limits on unfiltered air leakage into the CRE. These limits shall be stated in a manner to allow direct comparison to the unfiltered air inleakage measured by the testing described in paragraph c. The unfiltered air inleakage limit for radiological challenges is the inleakage flow rate assumed in the licensing basis analyses of DBA consequences.

f. The provisions of SR 3.0.2 are applicable to the Frequencies for assessing CRE habitability, determining CRE unfiltered inleakage, and measuring CRE pressure and assessing the CRE boundary as required by paragraphs c and d, respectively.

Enclosure 3

Browns Ferry Nuclear Plant (BFN)
Units 1, 2, and 3

Technical Specifications (TS) Change 444

Adoption of Changes to Standard Technical Specifications Under Technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability

Proposed Changes to Technical Specifications Bases Pages (Revised Mark-up)

TVA has revised the enclosed pages. A line was drawn through the deleted text and a double underline for new or revised text. TVA highlighted the text revised because of the NRC's RAI questions.

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Emergency Ventilation (CREV) System

BASES

BACKGROUND

The CREV System provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity. ~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of the CREV System includes two independent and redundant high efficiency air filtration subsystems for emergency treatment of outside supply air and a CRE boundary that limits the inleakage of unfiltered air. The CREV S~~s~~ystem has a high efficiency particulate air (HEPA) filter bank in the portion of the inlet piping common to both subsystems. Each CREV subsystem consists of a motor-driven fan, an electric duct air heater, an activated charcoal adsorber section, an electric charcoal heater, and the associated ductwork, valves or ~~and~~ dampers, doors, barriers, and instrumentation. The HEPA filter bank removes particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay; however, no credit is taken in the analyses for the charcoal adsorbers.

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural event and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air

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into the CRE will not exceed the inleakage assumed in the licensing basis analysis of design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to CRE occupants ~~control room personnel~~), the CREV System automatically switches to the pressurization mode of operation to minimize ~~prevent~~ infiltration of contaminated air into the CRE ~~control room~~. A system of dampers isolates the CRE ~~control room~~. Outside air is taken in through the CREV System ventilation intake and is passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles.

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BASES

BACKGROUND (continued)

The CREV System is designed to maintain a habitable environment in the CRE ~~control room environment~~ for a 30 day continuous occupancy after a DBA without exceeding 5 rem total effective dose equivalent (TEDE). A single CREV subsystem operating at a flow rate of 3000 cfm ±10 percent will pressurize the CRE ~~control room~~ to about 0.125 inches water gauge to minimize ~~prevent~~ infiltration of air from all surrounding areas adjacent to CRE boundary ~~buildings~~ and the outdoors. CREV System operation in maintaining CRE ~~control room~~ habitability is discussed in the FSAR, Section 10.12 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The ability of the CREV System to maintain the habitability of the CRE ~~control room~~ is an explicit assumption for the safety analyses presented in the FSAR, Chapters 10 and 14 (Refs. 2 and 3, respectively). The pressurization mode of the CREV System is assumed to operate following a DBA, ~~loss of coolant accident, main steam line break, and control rod drop accident (for the control rod drop accident and main steam line break, no credit is taken for any filtration by the CREV system)~~ as discussed in the FSAR, Section 14.6 (Ref. 4). The analyses for radiological doses to CRE occupants ~~control room personnel~~ as a result of the various DBAs are summarized in Reference 3. No single active failure will cause the loss of filtered outside air from the CRE ~~control room~~.

There are no offsite or onsite hazardous chemicals that would pose a credible threat to CRE habitability (Ref 9). Consequently, engineering controls for the CRE are not required to ensure habitability against chemical threat.

The evaluation of a smoke challenge demonstrated that smoke will not result in the inability of the CRE occupants to control the reactor either from the control room or remote shutdown system (Ref 9). The assessment verified that a fire or smoke event anywhere with the plant should not simultaneously render the remote shutdown system and the CRE uninhabitable, nor would it prevent access from the CRE to the remote shutdown system in the event remote shutdown is required. No automatic CREV

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actuation is required for hazardous chemical releases or smoke and no Surveillance Requirements are required to verify OPERABILITY in cases of hazardous chemicals or smoke.

The CREV System satisfies Criterion 3 of the NRC Policy Statement (Ref. 6).

(continued)

BASES (continued)

LCO

Two redundant subsystems of the CREV System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ if a single active failure disables the other subsystem. Total CREV S~~s~~ystem failure, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary, could result in exceeding a TEDE of 5 rem to the CRE occupants ~~control room operators~~ in the event of a DBA.

~~The~~ Each CREV ~~System~~ subsystem is considered OPERABLE when the individual components necessary to limit CRE occupant ~~control operator~~ exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions; and

c. The electric duct heater, ductwork, and dampers are OPERABLE.

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

In order for the CREV subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequences analyses for DBAs, and that the CRE occupants are protected from hazardous chemicals and smoke.

BFN does not have automatic CREV actuations for hazardous chemicals or smoke. Current practices at BFN do not utilize chemicals of sufficient quantity to present a chemical hazard to the CRE. Smoke is not considered in the current BFN safety

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analysis. Therefore, BFN has no specific limits on chemical hazards or smoke.

The LCO is modified by a Note allowing the CRE ~~main control room~~ boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE ~~main control room~~. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE ~~main control room~~ isolation is indicated.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, the CREV System must be OPERABLE to ensure that the CRE will remain habitable ~~control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREV System OPERABLE is not required in MODE 4 or 5, except for during operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

A.1

With one CREV subsystem inoperable, for reasons other than an inoperable CRE boundary, the inoperable CREV subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CREV subsystem is adequate to perform the CRE occupant ~~control room radiation~~ protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE subsystem could result in loss of the ~~reduced~~ CREV System function ~~capability~~. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

(continued)

BASES

ACTIONS (continued)

B.1, B.2 and B.3

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in a CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 REM TEDE) the CRE boundary is inoperable.

As discussed in the Applicable Safety Analysis Section, the BFN licensing bases notes that CRE inleakage limits for hazardous chemicals and smoke are not needed to protect the CRE occupants. Since the limit established for radiological events is limiting, verification of smoke and chemical hazards by administrative means is acceptable for an inoperable CRE boundary. Verification that the periodic check of onsite and offsite hazardous chemical sources has been performed within the time limit defined by the Control Room Habitability Program is an acceptable means to ensure the CRE occupants are protected from chemical hazards and smoke.

Actions must be taken to restore an OPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time

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period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems within the CRE boundary.

~~If the main control room boundary is inoperable in MODES 1, 2, and 3, the CREV trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE main control room boundary within 24 hours. During the period that the main control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the main control room boundary.~~

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable CREV subsystem or the CRE ~~control room~~ boundary cannot be restored to OPERABLE status within the required ~~associated~~ Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

During OPDRVs, if the inoperable CREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREV subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately initiate actions to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(continued)

BASES

ACTIONS (continued)

E.1

If both CREV subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE ~~control room boundary~~ (i.e., Condition B), the CREV System may not be capable of performing the intended function and the unit is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1 and F.2

During OPDRVs, with two CREV subsystems inoperable for reasons other than Condition C or with the Required Actions and associated Completion Times of B not met, actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(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 $\geq$ 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 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). Specific test Ffrequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.3

This SR verifies that on an actual or simulated initiation signal, each CREV subsystem starts and operates. This SR includes verification that dampers necessary for proper CREV operation function as required. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 and SR 3.3.7.1.6 overlaps this SR to provide complete testing of the safety function. The Frequency of 24 months is based on BFN's normal operating cycle.

SR 3.7.3.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more that 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. There is no automatic CREV actuation for hazardous chemical releases or smoke and there are no Surveillance Requirements to verify the OPERABILITY in cases of hazardous chemicals or smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analysis of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 6) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 7). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). Options for restoring the CRE boundary to OPERABLE status include

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changing the licensing basis DBA consequences analysis, repairing the CRE boundary, or a combination of these actions.

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.4

Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to outdoors is periodically tested to verify proper function of the CREV System. During the emergency mode of operation, the CREV System is designed to slightly pressurize the control room ≥ 0.125 inches water gauge positive pressure with respect to the outdoors to prevent unfiltered inleakage. The CREV System is designed to maintain this positive pressure at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm to the control room in the pressurization mode. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration systems SRs.~~

REFERENCES

1. FSAR, Section 10.12.
2. FSAR, Chapter 10.
3. FSAR, Chapter 14.
4. FSAR, Section 14.6.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
6. NRC Regulatory Guide 1.196, "Control Room Habitability At Light-Water Power Reactors". January 2007.
7. NEI 99-03, "Control Room Habitability Assessment," June 2001.
8. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694)
9. FSAR, Chapter 10.12.5.3, Toxic Gas Protection

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Emergency Ventilation (CREV) System

BASES

BACKGROUND

The CREV System provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity. ~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of the CREV System includes two independent and redundant high efficiency air filtration subsystems for emergency treatment of outside supply air and a CRE boundary that limits the inleakage of unfiltered air. The CREV S~~s~~ystem has a high efficiency particulate air (HEPA) filter bank in the portion of the inlet piping common to both subsystems. Each CREV subsystem consists of a motor-driven fan, an electric duct air heater, an activated charcoal adsorber section, an electric charcoal heater, and the associated ductwork, valves or ~~and~~ dampers, doors, barriers and instrumentation. The HEPA filter bank removes particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay; however, no credit is taken in the analyses for the charcoal adsorbers.

The CRE is the areas within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event or an accident. The CRE is protected during normal operation, natural event and accident conditions. The CRE boundary is the combination of wall, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air in the CRE will not

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exceed the inleakage assumed in the licensing basis analysis of design basis accident (CBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to CRE occupants ~~control room personnel~~), the CREV System automatically switches to the pressurization mode of operation to minimize ~~prevent~~ infiltration of contaminated air into the CRE ~~control room~~. A system of dampers isolates the CRE ~~control room~~. Outside air is taken in through the CREV System ventilation intake and is passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles.

(continued)

BASES

BACKGROUND (continued)

The CREV System is designed to maintain a habitable environment in the CRE ~~the control room environment~~ for a 30 day continuous occupancy after a DBA without exceeding 5 rem total effective dose equivalent (TEDE). A single CREV subsystem operating at a flow rate of 3000 CFM ± 10 percent will pressurize the CRE ~~control room~~ to about 0.125 inches water gauge to minimize ~~prevent~~ infiltration of air from all surrounding areas adjacent to CRE boundary ~~buildings~~ and the outdoors. CREV System operation in maintaining CRE ~~control room~~ habitability is discussed in the FSAR, Section 10.12 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The ability of the CREV System to maintain the habitability of the CRE ~~control room~~ is an explicit assumption for the safety analyses presented in the FSAR, Chapters 10 and 14 (Refs. 2 and 3, respectively). The pressurization mode of the CREV System is assumed to operate following a DBA ~~loss of coolant accident, main steam line break, and control rod drop accident (for the control rod drop accident and main steam line break, no credit is taken for any filtration by the CREV system)~~, as discussed in the FSAR, Section 14.6 (Ref. 4). The analyses for radiological doses to CRE occupants ~~control room personnel~~ as a result of the various DBAs are summarized in Reference 3. No single active failure will cause the loss of filtered outside air from the CRE ~~control room~~.

There are no offsite or onsite hazardous chemicals that would pose a credible threat to CRE habitability (Ref 9). Consequently, engineering controls for the CRE are not required to ensure habitability against chemical threat.

The evaluation of a smoke challenge demonstrated that smoke will not result in the inability of the CRE occupants to control the reactor either from the control room or remote shutdown system (Ref 9). The assessment verified that a fire or smoke event anywhere with the plant should not simultaneously render the remote shutdown system and the CRE uninhabitable, nor would

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it prevent access from the CRE to the remote shutdown system in the event remote shutdown is required. No automatic CREV actuation is required for hazardous chemical releases or smoke and no Surveillance Requirements are required to verify OPERABILITY in cases of hazardous chemicals or smoke.

The CREV System satisfies Criterion 3 of the NRC Policy Statement (Ref. 6).

(continued)

BASES (continued)

LCO

Two redundant subsystems of the CREV System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ if a single active failure, such as from a loss of both ventilation subsystems or from an inoperable CRE boundary, disables the other subsystem. Total system failure could result in exceeding a TEDE of 5 rem to the CRE occupants ~~control room operators~~ in the event of a DBA.

~~The~~ Each CREV subsystem ~~System~~ is considered OPERABLE when the individual components necessary to limit CRE occupant ~~control operator~~ exposure are OPERABLE in both subsystems. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions; and

c. The electric duct heater, ductwork, and dampers are OPERABLE.

In order for the CREV subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequences analyses for DBAs, and that the CRE occupants are protected from hazardous chemicals and smoke.

BFN does not have automatic CREV actuations for hazardous chemicals or smoke. Current practices at BFN do not utilize chemicals of sufficient quantity to present a chemical hazard to the CRE. Smoke is not considered in the current BFN safety analysis. Therefore, BFN has no specific limits on chemical hazards or smoke.

(continued)

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

The LCO is modified by a Note allowing the CRE ~~main control room~~ boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs and access panels. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators and CRE ~~main control room~~. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE ~~main control room~~ isolation is indicated.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, the CREV System must be OPERABLE to ensure that the CRE will remain habitable ~~control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREV System OPERABLE is not required in MODE 4 or 5, except for during operations with potential for draining the reactor vessel (OPDRVs).

ACTIONS

A.1

With one CREV subsystem inoperable, for reasons other than in inoperable CRE boundary, the inoperable CREV subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CREV subsystem is adequate to perform the CRE occupant ~~control room radiation~~ protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE subsystem could result in loss of the ~~reduced~~ CREV System function ~~capability~~. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

(continued)

BASES

ACTIONS

B.1, B.2, and B.3

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in a CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 REM TEDE) the CRE boundary is inoperable.

As discussed in the Applicable Safety Analysis Section, the BFN licensing bases notes that CRE inleakage limits for hazardous chemicals and smoke are not needed to protect the CRE occupants. Since the limit established for radiological events is limiting, verification of smoke and chemical hazards by administrative means is acceptable for an inoperable CRE boundary. Verification that the periodic check of onsite and offsite hazardous chemical sources has been performed within the time limit defined by the Control Room Habitability Program is an acceptable means to ensure the CRE occupants are protected from chemical hazards and smoke.

Actions must be taken to restore an OPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time

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period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems within the CRE boundary.

~~If the main control room boundary is inoperable in MODES 1, 2, and 3, the CREV trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE main control room boundary within 24 hours. During the period that the main control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the main control room boundary.~~

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable CREV subsystem or the CRE ~~control room~~ boundary cannot be restored to OPERABLE status within the required ~~associated~~ Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power

(continued)

conditions in an orderly manner and without challenging unit systems.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

During OPDRVs, if the inoperable CREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREV subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately initiate actions to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(continued)

BASES

ACTIONS (continued)

E.1

If both CREV subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE ~~control room boundary~~ (i.e., Condition B), the CREV System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1

During OPDRVs, with two CREV subsystems inoperable for reasons other than Condition C or with the Required Actions and associated Completion times of B not met, actions must be initiated immediately to suspend OPDVRs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(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 $\geq$ 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 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). Specific test frequencies and additional information are discussed in detail in the VFTP.

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BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.3

This SR verifies that on an actual or simulated initiation signal, each CREV subsystem starts and operates. This SR includes verification that dampers necessary for proper CREV operation function as required. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 and SR 3.3.7.1.6 overlaps this SR to provide complete testing of the safety function. The frequency of 24 months is based on BFN's normal operating time.

SR 3.7.3.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more that 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. There is no automatic CREV actuation for hazardous chemical releases or smoke and there are no Surveillance Requirements to verify the OPERABILITY in cases of hazardous chemicals or smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analysis of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 6) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 7). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). Options for restoring the CRE boundary to OPERABLE status include

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changing the licensing basis DBA consequences analysis, repairing the CRE boundary, or a combination of these actions.

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~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to outdoors is periodically tested to verify proper function of the CREV System. During the emergency mode of operation, the CREV System is designed to slightly pressurize the control room ≥ 0.125 inches water gauge positive pressure with respect to the outdoors to prevent unfiltered inleakage. The CREV System is designed to maintain this positive pressure at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm to the control room in the pressurization mode. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration systems SRs.~~

REFERENCES

1. FSAR, Section 10.12.
2. FSAR, Chapter 10.
3. FSAR, Chapter 14.
4. FSAR, Section 14.6.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
6. NRC Regulatory Guide 1.196, "Control Room Habitability At Light-Water Power Reactors". January 2007.
7. NEI 99-03, "Control Room Habitability Assessment," June 2001.
8. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694)
9. FSAR, Chapter 10.12.5.3, Toxic Gas Protection

B 3.7 PLANT SYSTEMS

B 3.7.3 Control Room Emergency Ventilation (CREV) System

BASES

BACKGROUND

The CREV System provides a protected environment from which occupants cab control the unit following an uncontrolled release of radioactivity ~~radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA).~~

The safety related function of the CREV System includes two independent and redundant high efficiency air filtration subsystems for emergency treatment of outside supply air and a CRE boundary that limits the inleakage of unfiltered air. The CREV S~~s~~ystem has a high efficiency particulate air (HEPA) filter bank in the portion of the inlet piping common to both subsystems. Each CREV subsystem consists of a motor-driven fan, an electric duct air heater, an activated charcoal adsorber section, an electric charcoal heater, and the associated ductwork, valves or ~~and~~ dampers, doors, barriers, and instrumentation. The HEPA filter bank removes particulate matter, which may be radioactive. The charcoal adsorbers provide a holdup period for gaseous iodine, allowing time for decay; however, no credit is taken in the analyses for the charcoal adsorbers.

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident. The CRE is protected during normal operation, natural event and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of

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design basis accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program.

Upon receipt of the initiation signal(s) (indicative of conditions that could result in radiation exposure to CRE occupants ~~control room personnel~~), the CREV System automatically switches to the pressurization mode of operation to minimize ~~prevent~~ infiltration of contaminated air into the CRE ~~control room~~. A system of dampers isolates the CRE ~~control room~~ Outside air is taken in through the CREV System ventilation intake and is passed through one of the charcoal adsorber filter subsystems for removal of airborne radioactive particles.

(continued)

BASES

BACKGROUND (continued)

The CREV System is designed to maintain ~~the control room environment~~ a habitable environment in the CRE for a 30 day continuous occupancy after a DBA without exceeding 5 rem total effective dose equivalent (TEDE). A single CREV subsystem operating at a flow rate of 3000 cfm ± 10 percent will pressurize the CRE ~~control room~~ to about 0.125 inches water gauge to minimize ~~prevent~~ infiltration of air from all surrounding areas adjacent to CRE boundary ~~buildings~~ and the outdoors. CREV System operation in maintaining CRE ~~control room~~ habitability is discussed in the FSAR, Section 10.12 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The ability of the CREV System to maintain the habitability of the CRE ~~control room~~ is an explicit assumption for the safety analyses presented in the FSAR, Chapters 10 and 14 (Refs. 2 and 3, respectively). The pressurization mode of the CREV System is assumed to operate following DBA, ~~loss of coolant accident, main steam line break, and control rod drop accident (for the control rod drop accident and main steam line break, no credit is taken for any filtration by the CREV system)~~ as discussed in the FSAR, Section 14.6 (Ref. 4). The analyses for radiological doses to CRE occupants as a result of the various DBAs are summarized in Reference 3. No single active failure will cause the loss of filtered outside air from the CRE ~~control room~~.

There are no offsite or onsite hazardous chemicals that would pose a credible threat to CRE habitability (Ref 9). Consequently, engineering controls for the CRE are not required to ensure habitability against chemical threat.

The evaluation of a smoke challenge demonstrated that smoke will not result in the inability of the CRE occupants to control the reactor either from the control room or remote shutdown system (Ref 9). The assessment verified that a fire or smoke event anywhere with the plant should not simultaneously render the remote shutdown system and the CRE uninhabitable, nor would it prevent access from the CRE to the remote shutdown system

(continued)

in the event remote shutdown is required. No automatic CREV actuation is required for hazardous chemical releases or smoke and no Surveillance Requirements are required to verify OPERABILITY in cases of hazardous chemicals or smoke.
The CREV System satisfies Criterion 3 of the NRC Policy Statement (Ref. 6).

(continued)

BASES (continued)

LCO

Two redundant subsystems of the CREV System are required to be OPERABLE to ensure that at least one is available, ~~assuming~~ if a single active failure, such as from a loss of both ventilation subsystems or form an inoperable CRE boundary, disables the other subsystem. Total system failure could result in exceeding a TEDE of 5 rem to the CRE occupants ~~control room operators~~ in the event of a DBA.

~~The~~ Each CREV ~~System~~ subsystem is considered OPERABLE when the individual components necessary to limit CRE occupant ~~control operator~~ exposure are OPERABLE ~~in both subsystems~~. A subsystem is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filter and charcoal adsorbers are not excessively restricting flow and are capable of performing their filtration functions; and

c. The electric duct heater, ductwork, and dampers are OPERABLE.

~~In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.~~

In order for the CREV subsystems to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequences analyses for DBAs, and that the CRE occupants are protected from hazardous chemicals and smoke.

BFN does not have automatic CREV actuations for hazardous chemicals or smoke. Current practices at BFN do not utilize chemicals of sufficient quantity to present a chemical hazard to

(continued)

the CRE. Smoke is not considered in the current BFN safety analysis. Therefore, BFN has no specific limits on chemical hazards or smoke.

The LCO is modified by a Note allowing the CRE ~~main control room~~ boundary to be opened intermittently under administrative controls. This note only applies to openings in the CRE boundary that can be rapidly restored to the design condition such as doors, hatches, floor plugs, and access panels. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening and to restore the CRE boundary who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE ~~main control room~~ isolation is indicated.

(continued)

BASES (continued)

APPLICABILITY

In MODES 1, 2, and 3, the CREV System must be OPERABLE to ensure that the CRE will remain habitable ~~control operator exposure~~ during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREV System OPERABLE is not required in MODE 4 or 5, except for during operations with potential for draining the reactor vessel (OPDRVs).

ACTIONS

A.1

With one CREV subsystem inoperable, for reasons other than an inoperable CRE boundary, the inoperable CREV subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CREV subsystem is adequate to perform the CRE occupant ~~control room radiation~~ protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE subsystem could result in a loss of the ~~reduced~~ CREV System function ~~capability~~. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

(continued)

BASES

ACTIONS

B.1, B.2 and B.3
(continued)
If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in a CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to 5 REM TEDE) the CRE boundary is inoperable.

As discussed in the Applicable Safety Analysis Section, the BFN licensing bases notes that CRE inleakage limits for hazardous chemicals and smoke are not needed to protect the CRE occupants. Since the limit established for radiological events is limiting, verification of smoke and chemical hazards by administrative means is acceptable for an inoperable CRE boundary. Verification that the periodic check of onsite and offsite hazardous chemical sources has been performed within the time limit defined by the Control Room Habitability Program is an acceptable means to ensure the CRE occupants are protected from chemical hazards and smoke.

Actions must be taken to restore an OPERABLE CRE boundary within 90 days.

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time

(continued)

period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems within the CRE boundary.

~~If the main control room boundary is inoperable in MODES 1, 2, and 3, the CREV trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE main control room boundary within 24 hours. During the period that the main control room boundary is inoperable, appropriate compensatory measures (consistent with the intent of GDC 19) should be utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the main control room boundary.~~

C.1 and C.2

In MODE 1, 2, or 3, if the inoperable CREV subsystem or the CRE ~~control room boundary~~ cannot be restored to OPERABLE status within the required ~~associated~~ Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

During OPDRVs, if the inoperable CREV subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREV subsystem may be placed in the pressurization mode. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action D.1 is to immediately initiate actions to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(continued)

BASES

ACTIONS (continued)

E.1

If both CREV subsystems are inoperable in MODE 1, 2, or 3 for reasons other than an inoperable CRE ~~control room boundary~~ (i.e., Condition B), the CREV System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

F.1

During OPDRVs, with two CREV subsystems inoperable for reasons other than Condition C or with the Required Actions and associated Completion Times of B not met, actions must be initiated immediately to suspend OPDVRs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

(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 $\geq$ 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 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). Specific test frequencies and additional information are discussed in detail in the VFTP.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.3.3

This SR verifies that on an actual or simulated initiation signal, each CREV subsystem starts and operates. This SR includes verification that dampers necessary for proper CREV operation function as required. The LOGIC SYSTEM FUNCTIONAL TEST in SR 3.3.7.1.4 and SR 3.3.7.1.6 overlaps this SR to provide complete testing of the safety function. The frequency of 24 months is based on BFN's normal operating cycle.

SR 3.7.3.4

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more that 5 rem TEDE and the CRE occupants are protected from hazardous chemicals and smoke. There is no automatic CREV actuation for hazardous chemical releases or smoke and there are no Surveillance Requirements to verify the OPERABILITY in cases of hazardous chemicals or smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analysis of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. 6) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. 7). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. 8). Options for restoring the CRE boundary to OPERABLE status include

(continued)

changing the licensing basis DBA consequences analysis, repairing the CRE boundary, or a combination of these actions.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.3.4

(continued)

Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

~~This SR verifies the integrity of the control room enclosure and the assumed inleakage rates of potentially contaminated air. The control room positive pressure, with respect to outdoors is periodically tested to verify proper function of the CREV System. During the emergency mode of operation, the CREV System is designed to slightly pressurize the control room ≥ 0.125 inches water gauge positive pressure with respect to the outdoors to prevent unfiltered inleakage. The CREV System is designed to maintain this positive pressure at a flow rate of ≥ 2700 cfm and ≤ 3300 cfm to the control room in the pressurization mode. The Frequency of 24 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration systems SRs.~~

REFERENCES

1. FSAR, Section 10.12.
2. FSAR, Chapter 10.
3. FSAR, Chapter 14.
4. FSAR, Section 14.6.
5. NRC No. 93-102, "Final Policy Statement on Technical Specification Improvements," July 23, 1993.
6. NRC Regulatory Guide 1.196, "Control Room Habitability At Light-Water Power Reactors", January 2007.

7. NEI 99-03, "Control Room Habitability Assessment," June 2001.

8. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694)

9. FSAR, Chapter 10.12.5.3, Toxic Gas Protection

Enclosure 4

Browns Ferry Nuclear Plant (BFN)
Units 1, 2, and 3

Technical Specifications (TS) Change 444

Adoption of Changes to Standard Technical Specifications Under Technical Specification Task Force (TSTF) Change Number - 448, Revision 3, Regarding Control Room Envelope Habitability

Regulatory Commitments (Revised)

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1. The first performance of the periodic assessment of the Control Room Envelope (CRE) Habitability, Technical Specification 5.5.13.c.(ii), shall be within 9 months following the initial implementation of the TS Change. The next performance of the periodic assessment will be in a period specified by the specified by the Control Room Envelope Habitability Program. That is 3 years from the last successful performance of the Technical Specification 5.5.13.c.(ii) tracer gas test.